Clouds and the Earth's Radiant Energy System (CERES)

Data Management System

Operator's Manual

Grid Geostationary Narrowband Radiances (Subsystem 11)

CER11.1P1-8, CER11.1P10 CER11.2P1, CER11.2P2, CER11.3P1, CER11.4P1, and CER11.6P1

Release 3 Version 9

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Document Revision Record

The Document Revision Record contains information pertaining to approved document changes. The table lists the date the Software Configuration Change Request (SCCR) was approved, the Release and Version Number, the SCCR number, a short description of the revision, and the revised sections. The document authors are listed on the cover. The Head of the CERES Data Management Team approves or disapproves the requested changes based on recommendations of the Configuration Control Board.

Document Revision Record (1 of 3)

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
11/27/01	R3V2	311	• Changed Alternate Analyst information. • Added control flag runtime parameter to indicate whether PGEs are first or second pass. • Changed PGEs CER11.1P1-4 and CER11.2P1 to be first pass PGEs. Run-time parameters, output product names have been modified. Secondary inputs (MOA, ESNOW, EICE) for CER11.1P1-4 were eliminated. • Added second pass PGEs CER11.1P5-8 and CER11.2P2. • Added PGE CER11.3P1: Recalibrate GGEO Input Radiance Data. • Added PGE CER11.4P1: Create Correlation Plots of GGEO vs. VIRS Cloud Data. • Added PGE CER11.5P1: Create Geostationary Regression Coefficients. • Deleted cloud inputs not needed for first pass processing. • Updated format to comply with standards.	All 1.0-10.0 1.0-4.0, 9.0 5.0-8.0, 10.0 11.0 12.0 13.0 1.3.3,1.3.4,1.3.5,2.3.2,2.3.3,2.3.4,3.3.2,3.3.3,3.3.4,4.3.2,4.3.3,&4.3.4 All
03/25/02	R3V3	329	• Added PCFin, PCF, and Log files to Expected Output Dataset(s) tables. • Updated format to comply with standards.	1.6, 2.6, 3.6, 4.6, 5.6, 6.6, 7.6, 8.6, 9.6, 10.6, 11.6, 12.6, 13.6 All
06/07/02	R3V4	366	• Added desert scratch files to Expected Temporary Files table for PGE CER11.3P1. • Updated format to comply with standards.	11.7 All

Document Revision Record (2 of 3)

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
09/03/02	R3V5	379	• In Table 12-6, the cal_coeffs files which get created or appended to in the data/ancillary/dynamic directory are the permanent output files. The cal_coeffs files in the data/out_comp/coeffs were previously listed in this table, but they were moved to Table 12-7, the table for Expected Temporary files. Note that the number and name of the files have also changed. • Updated the Total Run Time statistic in the Memory/Disk Space/Time Requirements sections for PGEs 11.1P5-8, 11.2P2, 11.3P1, 11.4P1, and 11.5P1. • Updated format to comply with standards.	11.6 & 11.7 5.2.5, 6.2.5, 7.2.5, 8.2.5, 9.2.5, 10.2.5, 11.2.4, 12.2.4, & 13.2.4 All
03/31/03	R3V6	426	• Updated image file naming conventions. • Added new expected QA output files for first pass main processor. • Updated format to comply with standards.	1.3.1, 1.3.2, 2.3.1, 3.3.1, 4.3.1, 5.3.1, 5.3.2, 6.3.1, 7.3.1, 8.3.1 1.6, 2.6, 3.6, 4.6 All
11/24/03	R3V7	486	• Two modifications to Table 12-5, "Expected Output File Listing for CER11.4P1" - ($SS11_4}_{$PS11_4}_{$CC11_4} added to CER_cloudplot.ps filename - new file, CER_cloudplot*.stats, added to table. • Updated sections describing the B1 Input dataset file names for GOES-8 and GOES-9/10. • Updated format to comply with standards.	12.6 1.3.1, 1.3.2, 2.3.1, 5.3.1, 5.3.2, 6.3.1 All
04/12/04	R3V8	518	• Removed all references to PGE CER11.5P1. • The Generic PGE Entries were removed from Appendix C. • Updated format to comply with standards.	Document Overview, Sec.13 (removed) Appendix C All

Document Revision Record (3 of 3)

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
03/07/05	R3V9	553	• Added information for two new PGEs: CER11.1P10 and CER11.6P1.	Document Overview, Subsystem Overview, 9.0-9.7, 14.0-14.7
			• Added numBATCHjobs info to main processor automated job procedures.	1.2.1, 1.4.2, 2.2.1, 2.4.2, 3.2.1, 3.4.2, 4.2.1, 4.4.2, 5.2.1, 5.4.2, 6.2.1, 6.4.2, 7.2.1, 7.4.2
			• Corrected startDay comment to show that value can be a single zero (0) rather than a double zero string (00).	1.4.3, 2.4.3, 3.4.3, 4.4.3, 5.4.3, 6.4.3, 7.4.3, 8.4.3
			• Removed reference to orbital files from main processor sections except those for GOES-8 non-McIDAS.	2.4.3, 3.4.3, 4.4.3, 6.4.3, 7.4.3, 8.4.3
			• Removed “$” from variable names in the expected output file tables. The “{ }” notation is sufficient to designate variables.	1.6, 2.6, 3.6, 4.6, 5.6, 6.6, 7.6, 8.6, 10.6, 11.6, 12.6, 13.6
			• Removed “$” from variable names in the Expected Temporary Files/Directories tables. The “{ }” notation is sufficient to designate variables.	1.7, 2.7, 3.7, 4.7, 5.7, 6.7, 7.7, 8.7
			• Removed repetition of PGE number.	10.0, 11.0
			• Corrected GGEO output file size, 1775 MB -> 1933 MB.	10.6, 11.6, 12.3.1, 13.3.1
			• Changed “VIRS” references to “CERES”.	Subsystem Overview, 11.1.4, 12.0, 13.0
			• Modified Temporary File file names for PGE CER11.4P1. Specifically, three REGAVG files have been combined into a single (i.e. one) file.	13.7
			• Updated format to comply with standards.	All

Preface

The Clouds and the Earth's Radiant Energy System (CERES) Data Management System supports the data processing needs of the CERES Science Team research to increase understanding of the Earth's climate and radiant environment. The CERES Data Management Team works with the CERES Science Team to develop the software necessary to support the science algorithms. This software, being developed to operate at the Langley Atmospheric Sciences Data Center (ASDC), produces an extensive set of science data products.

The Data Management System consists of 12 subsystems; each subsystem represents one or more stand-alone executable programs. Each subsystem executes when all of its required input data sets are available and produces one or more archival science products.

This Operator's Manual is written for the data processing operations staff at the Langley ASDC by the Data Management Team responsible for this Subsystem. Each volume describes all Product Generation Executables for a particular subsystem and contains the Runtime Parameters, Production Request Parameters, the required inputs, the steps used to execute, and the expected outputs for each executable included within this Subsystem. In addition, all subsystem error messages and subsequent actions required by the ASDC operations staff are included.

Acknowledgment is given to Yvonne M. Seaman and Waldena Banks of Science Applications International Corporation (SAIC) for their support in the preparation of this document and to Maria Vallas Mitchum, NASA Langley Research Center, and Sandra K. Nolan, SAIC, for structuring the manual guidelines and organization.

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Introduction

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS). The CERES instrument provides radiometric measurements of the Earth's atmosphere from three broadband channels: a shortwave channel (0.3 - 5 ∝m), a total channel (0.3 - 200 ∝m), and an infrared window channel (8 - 12 ∝m). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES continues that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which has an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation and to improve the consistency between the cloud parameters and the radiation fields, CERES includes cloud imager data and other atmospheric parameters. The CERES instruments fly on the TRMM spacecraft, on the EOS-AM platforms and on the EOS-PM platforms. The TRMM satellite carries one CERES instrument while the EOS satellites carry two CERES instruments, one operating in a fixed azimuth scanning mode and the other operating in a rotating azimuth scanning mode.

Document Overview

This document, Grid Geostationary Narrowband Radiances Release 2 Operator's Manual, is part of the CERES Subsystem 11, often referred to as GGEO, delivery package provided to the Langley Atmospheric Sciences Data Center (ASDC). It provides a description and explains the procedures for executing the CERES Subsystem 11 software. A description of the acronyms and abbreviations is provided in Appendix A. A list of messages that can be generated during the execution of PGEs CER11.1P1- CER11.1P4 and CER11.2P1 are contained in Appendix B. Sample ASCII (PCFin) File Listings for Subsystem 11 are provided in Appendix C.

This document is organized as follows:

Introduction
Document Overview
Subsystem Overview
1.0 PGEName: CER11.1P1
2.0 PGEName: CER11.1P2
3.0 PGEName: CER11.1P3
4.0 PGEName: CER11.1P4
5.0 PGEName: CER11.1P5
6.0 PGEName: CER11.1P6
7.0 PGEName: CER11.1P7
8.0 PGEName: CER11.1P8
9.0 PGEName: CER11.1P10

10.0 PGEName: CER11.2P1
11.0 PGEName: CER11.2P2
12.0 PGEName: CER11.3P1
13.0 PGEName: CER11.4P1
14.0 PGEName: CER11.6P1

Reference
Appendix A - Acronyms and Abbreviations
Appendix B - Error Messages for Subsystem 11
Appendix C - Sample ASCII (PCFin) File Listings for Subsystem 11

Subsystem Overview

The CERES project uses satellite-mounted scanner instruments to collect broadband radiative flux measurements around the globe. The purpose of collecting these data is to help atmospheric scientists better understand the Earth's radiant energy budget and to provide them with data for building better global climate models.

One shortcoming of the CERES data is that the number of satellites collecting the data is limited to a few orbiting platforms. Because of the orbital characteristics of these platforms, the CERES instruments can view any region on the Earth at most only two or three times during a 24-hour period. Therefore, every region will have large time gaps for which no observational broadband data will be available.

To help interpolate the data through the gaps, the CERES Project uses narrowband measurements collected by the International Satellite Cloud Climatology Project (ISCCP). The ISCCP data are collected primarily from instruments aboard geostationary satellites which view large areas of the Earth continuously and thus can provide a pattern for the diurnal variations of the regions within those areas. The geostationary satellites are at high altitudes, and near-global coverage can be achieved with as little as four or five strategically located satellites. The ISCCP project also collects data from polar orbiting satellites which provide some, but not continuous, coverage at the high latitude regions which are not visible from the geostationary platforms.

GGEO is the Subsystem which grids the ISCCP narrowband data within regions defined by the CERES one-degree nested grid and averages the data over each hour. The CERES Project will only use ISCCP data from every third hour. Currently, only data from geostationary satellites is being used.

The GGEO subsystem is designed to run as a two-pass processing system. During the first pass, input data is processed with default count conversion coefficients. Cloud processing is turned off so as to speed up processing. The resultant first-pass GGEO product is used to intercalibrate the input data from the various sources using CERES data from the SFC product as a baseline. After this is accomplished, a second pass through the system is made, this time recalibrating the input data with coefficients generated during the first pass.

CER11.1P1 - CER11.1P8, CER11.1P10: Grid Geostationary Narrowband Radiances (for GOES-East, GOES-West, Meteosat, and GMS); Subsystem 11 Main Processors

Subsystem 11 has nine Main Processor Product Generation Executables (PGEs). The first eight, CER11.1P1-8, represent two pass processing for each of four input satellite formats: GOES-East, GOES-West, Meteosat, and GMS. CER11.1P10 is second pass processing for McIDAS image data flat files from all satellites.

Each Main Processor PGE grids data for a single geostationary satellite. Each execution of a PGE can process an entire month's worth of data or just a portion of a month. The intermediate output file created by a Main Processor PGE is called a granfile.

The operating procedures for the Main Processor PGEs are very similar to each other with only minor differences. The PGEs are described separately in later sections of this document.

CER11.1P1 - CER11.1P4, First Pass Processing

During the first pass of the Main Processor PGEs, jobs are run with default calibration coefficients. The primary purpose of the first pass is to intercalibrate the input data from the various geostationary satellites. Since cloud data is not needed for recalibrating the input and is not as accurate prior to recalibratiion, cloud processing is turned off during first pass processing. This also greatly speeds up the processing.

The granfile outputs from the first pass are designated by the product code GRANp. The collection of all first pass granfiles for a single data month is the primary input into the Subsystem 11 first pass Postprocessor PGE, CER11.2P1.

CER11.1P5 - CER11.1P8, Second Pass Processing

During the second pass of the Main Processor PGEs, the recalibration coefficients calculated during the first pass are used, and cloud processing is turned on. The granfile outputs from second pass processing are designated by the product code GRAN. The collection of all second pass granfiles for a single data month is the primary input into the Subsystem 11 second pass Postprocessor PGE, CER11.2P2.

CER11.1P10, Second Pass Processing, McIDAS Image Data flat file

This PGE does second pass processing on data in McIDAS image data flat file format. The McIDAS flat file format is a common format for data from all satellites. The input data image file, referred to as a flat file, is actually output from processing on raw McIDAS input files received at the DAAC.

CER11.2P1 - CER11.2P2: Sort and Merge Gridded Geostationary Narrowband Radiances; Subsystem 11 Postprocessor

The Subsystem 11 Post Processor merges the output granfiles from the Subsystem 11 Main Processors and produces a single output GGEO file. The Postprocessor also has two passes. The processing for the two passes are exactly identical, except that the first pass uses first pass input granfiles with product code GRANp and produces a first pass output GGEO file with product code

GGEOp. The second pass Postprocessor uses second pass granfiles with product code GRAN, and it produces a second pass output GGEO file with product code GGEO.

CER11.3P1: Recalibrate GGEO Input Radiance Data

This PGE reads mean radiance data from the first pass GGEO output and uses this to intercalibrate data from the various input sources by correlating each set of data to CERES data on the SFC file. Output from this PGE is a set of coefficients for recalibrating data from each input source.

CER11.4P1: Create Correlation Plots of GGEO vs. CERES Cloud Data

This PGE reads cloud data from the second pass GGEO output file and creates correlation plots of this data vs. CERES cloud data on the SFC file.

CER11.6P1: GGEO Weeder

This PGE removes bad data from the GGEO output product, as opposed to correcting the bad data, thus the name "Weeder." Occasional bad data get into the output product due to corrupted input data. These are often easily detectable by reviewing the GGEO Web plots created during post processing. Since the input data are corrupt, there is no obvious way to correct these data. The GGEO Weeder PGE provides a quick method for removing entire images or portions of images which contain bad data. The alternative, rerunning the main processor, could require several days of processing, and it would not allow the option of removing only a portion of an image.

Inputs to the GGEO Weeder PGE are the GGEO output product and an ancillary data product identifying the hourbox areas to remove. The PGE output is named GGEOW and has the same format as the GGEO product.

1.0 PGEName: CER11.1P1

Grid Geostationary Narrowband Radiances Main Processor (1st pass), GOES-East

This PGE processes narrowband data from the GOES-East satellite. The current GOES-East satellite is GOES-8.

1.1 PGE Details

1.1.1 Responsible Persons

Table 1-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

1.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

1.1.3 Parent PGE(s)

Not applicable.

1.1.4 Target PGE(s)

Table 1-2. Target PGEs after CER11.1P1

PGEName	Description
CER11.2P1	Sort and Merge Gridded Geostationary Narrowband Radiances, 1st pass

1.2 Operating Environment

1.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 1.4.2).

Table 1-3. Automated Runtime Parameters for CER11.1P1

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P1[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	1
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P1 environment variable is set to the name of GOES-East satellite (e.g. GOES-8).

1.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 1.4.3).

Table 1-4. Runtime Parameters for CER11.1P1

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P1[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	1
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])
orbitFiles[g]	Names of files containing orbit information for geolocating image data	character string	(see footnotes [h] and [f])

a. The $SS11_1P1 environment variable is set to the name of GOES-East satellite (e.g. GOES-8).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and GOES-East image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 1.3.1).
Ex 1: "B1199801{0[6-9],10}*" for days 6 thru 10
Ex 2: "B119971231* B1199801* B119980201*" for the entire month of Jan 1998 (including the overlap hours from the preceding and following months).
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.
g. Optional. If orbit file names not listed, script will use startDay and endDay arguments, and GOES-East orbital file naming convention to find orbital files located in ***$(CERESHOME)/ggeo/data/input*** directory.
h. Same as footnote (e), except the names of the orbital files begin with "OA" instead of "B1".

1.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A Langley TRMM Information System (LaTIS) start-up script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P1	**Sampling Strategy, PGEs CER11.1P1 and CER11.1P5 (GOES-East)**
SS11	**Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M	**Production Strategy, Subsystem 11 Main Processors**
PS11	**Production Strategy, Subsystem 11 Postprocessor**
CC11	**Configuration Code, Subsystem 11**
SW11	**Software SCCR#, Subsystem 11**
DATA11	**Data SCCR#, Subsystem 11**

1.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

1.2.5 Memory/Disk Space/Time Requirements

Memory:	**31 MB**
Disk Space:	**2.3 GB**
Total Run Time:	**23.5 hrs**

1.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

1.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

1.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for GOES-East

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the date:
- B1{yyyy}{mm}{dd}{hh}{mn}
- ISCCP.B1.0.GOE-8.{yyyy}.{mm}.{hh}.{mn}.MSC
- ISCCP.B1.0.GOES-8.{yyyy}.{mm}.{hh}.{mn}.MSC

where
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

1. Mandatory/Optional: **Mandatory. For each image file, there must be a corresponding orbital file. Image files without a corresponding orbital file should be excluded.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data and orbital files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the Canadian Atmospheric Environmental Services (AES)

c. Alternate Data Set, if one exists (maximum waiting period): Not Applicable (**N/A)**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **8.7 MB x 256 hrs**

1.3.2 Input Dataset Name (#2): ISCCP B1 Level image orbital file

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the date:
- OA{yyyy}{mm}{dd}{hh}{mn}
- ISCCP.OA.0.GOE-8.{yyyy}.{mm}.{hh}.{mn}.MSC
- ISCCP.OA.0.GOES-8.{yyyy}.{mm}.{hh}.{mn}.MSC

where
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

1. Mandatory/Optional: **For every image data file (see** Section 1.3.1**), an orbital file with corresponding date/time is Mandatory. Orbital files that do not have a corresponding image file should be excluded.**
2. Time Related Dependency: **Same as in** Section 1.3.1**.**
3. Waiting Period: **Same as in** Section 1.3.1**.**

b. Source of Information (Source PGE name or Ingest Source):

Same as in Section 1.3.1**.**

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **3007 bytes x 256 hours**

1.4 Operating Procedures (Procedure for each part of the processor's elements)

1.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

1.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 1.4.3 through 1.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 1.4, or else he/she can skip this Section (1.4.2) and start with the procedures in Section 1.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the GOES-East image and orbital files follow the naming conventions shown in Section 1.3.1-a and Section 1.3.2-a, respectively. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 1-3)

1. satName (***GOES-8***, or name of GOES-East satellite for data being processed)
2. 4-digit dataYear (***yyyy***)

3. 2-digit dataMonth (***mm***)
4. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1)***, then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this. If you complete the instructions above, the remainder of Section 1.4 can be skipped.

1.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 1-4)

1. satName (***GOES-8***, or name of GOES-East satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]

6. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]

The following two arguments are optional. If they are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the GOES-East input file naming conventions shown in Sections 1.3.1-a and 1.3.2-a.

7. character string of image files (e.g. ***"B1199712311145 B1199801*"***)
   [NOTE: This argument is required if the GOES-East image files do not conform to the naming convention.]
8. character string of orbital files (e.g. ***"OA199712311145 OA199801*"***)
   [NOTE: This argument is required if the GOES-East image files do not conform to the naming convention.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=1)*
["*image files ...*" "*orbital files ...*"]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P1_PCFin_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

1.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 1.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P1_PCF_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

1.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 1.4.4.

1.4.6 Special Case Considerations

N/A at this time.

1.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=1)***

where ***satName***, ***yyyy***, ***mm***, ***dd, and controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 1.4.3).

NOTE: The environment variables in Section 1.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

1.5 Execution Evaluation

1.5.1 Exit Code

CER11.1P1 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 1-5.

Table 1-5. Exit Codes for CER11.1P1

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

1.5.2 Screen Messages (Use Table format for large number of messages)

None.

1.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P1_LogReport_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P1_LogStatus_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P1_LogUser_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

1.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

1.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

1.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 1-6. Expected Output File Listing for CER11.1P1

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRANp_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRPp_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPWp_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER_ColdCLDp_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_NoonDATAp_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER11.1P1_PCFin_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P1_PCF_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P1_LogReport_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P1_LogStatus_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P1_LogUser_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

1.7 Expected Temporary Files/Directories

Table 1-7. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P1}_{PS11_M}

2.0 PGEName: CER11.1P2

Grid Geostationary Narrowband Radiances Main Processor (1st pass), GOES-West

This PGE processes narrowband data from the GOES-West satellite. The current GOES-West satellite is GOES-10.

2.1 PGE Details

2.1.1 Responsible Persons

Table 2-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

2.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 2-1.

2.1.3 Parent PGE(s)

Not applicable

2.1.4 Target PGE(s)

Table 2-2. Target PGEs after CER11.1P2

PGEName	Description
CER11.2P1	Sort and Merge Gridded Geostationary Narrowband Radiances, 1st pass

2.2 Operating Environment

2.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 2.4.2).

Table 2-3. Automated Runtime Parameters for CER11.1P2

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P2[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	1
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P2 environment variable is set to the name of GOES-West satellite (e.g. GOES-9 or GOES-10).

2.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 2.4.3).

Table 2-4. Runtime Parameters for CER11.1P2

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P2[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	1
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])

a. The $SS11_1P2 environment variable is set to the name of GOES-West satellite (e.g. GOES-9 or GOES-10).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and GOES-West image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 2.3.1).
Ex 1: "980{0[6-9],10}*.B1D" for days 6 thru 10 of Jan 1998.
Ex 2: "980{3[1-9],4[0-9],5[0-9]}*.B1D" for the entire month of Feb 1998 (days of the year, 31 through 58) including the overlap hours from the preceding and following months. [NOTE: If there are no other GOES-West files in the input directory, then "98*.B1D" would be a sufficient description of the input image files.]
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

2.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P2 **Sampling Strategy, PGEs CER11.1P2 and CER11.1P6 (GOES-West)**
SS11 **Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M **Production Strategy, Subsystem 11 Main Processors**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**

SW11 **Software SCCR#, Subsystem 11**
DATA11 **Data SCCR#, Subsystem 11**

2.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

2.2.5 Memory/Disk Space/Time Requirements

Memory: **805 MB**
Disk Space: **2.9 GB**
Total Run Time: **23.9 hrs**

2.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

2.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

2.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for GOES-West

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are two different naming conventions used, depending on the date:
- {yy}{ddd}{hh}{mn}{ss}i{sat}.B1D
- {yyyy}{ddd}{hh}{mn}{ss}i{sat}.B1D

where
yy = 2-digit year (e.g. 98 for 1998)
yyyy = 4-digit year (e.g. 2000)
ddd = 3-digit day-of-year

hh = 2-digit hour-of-day
mn = 2-digit minute
ss = 2-digit second
sat = 2-digit satellite number (e.g. 09 for GOES-9, 10 for GOES-10, etc.)

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **11 MB x 256 hrs**

2.4 Operating Procedures (Procedure for each part of the processor's elements)

2.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

2.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 2.4.3 through 2.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 2.4, or else he/she can skip this Section (2.4.2) and start with the procedures in Section 2.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the GOES-West image files follow the naming convention shown in Section 2.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 2-3)

1. satName (***GOES-10***, or name of GOES-West satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this.

If you complete the instructions above, the remainder of Section 2.4 can be skipped.

2.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 2-4)

1. satName (***GOES-10***, or name of GOES-West satellite for data being processed)
2. 4-digit dataYear (***yyyy***)

3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]
6. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the GOES-West input file naming conventions shown in Section 2.3.1-a.

7. character string of image files (e.g. ***"97*.B1D 98*.B1D"***)
   [NOTE: This argument is required if the GOES-West image files do not conform to the naming convention. The example above assumes that only the GOES-West input files for the month being processed are in the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=1)*
[*"image files ..."*]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P2_PCFin_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

2.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 2.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P2_PCF_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

2.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile***

where ***PCFile*** is the name of the Main Processor PCF generated in Section 2.4.4.

2.4.6 Special Case Considerations

N/A at this time.

2.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=1)***

where ***satName***, ***yyyy***, ***mm***, ***dd,*** and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 2.4.3).

NOTE: The environment variables in Section 2.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

2.5 Execution Evaluation

2.5.1 Exit Code

CER11.1P2 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 2-5.

Table 2-5. Exit Codes for CER11.1P2

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

2.5.2 Screen Messages (Use Table format for large number of messages)

None.

2.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P2_LogReport_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P2_LogStatus_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P2_LogUser_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

2.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

2.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

2.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 2-6. Expected Output File Listing for CER11.1P2

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRANp_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRPp_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPWp_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER_ColdCLDp_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_NoonDATAp_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER11.1P2_PCFin_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P2_PCF_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P2_LogRepor_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P2_LogStatus_{SS11_1P2}_$PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P2_LogUser_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

2.7 Expected Temporary Files/Directories

Table 2-7. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P2}_{PS11_M}

3.0 PGEName: CER11.1P3

Grid Geostationary Narrowband Radiances Main Processor (1st pass), Meteosat

This PGE processes narrowband data from the Meteosat satellite. The current Meteosat satellite is METEO-6.

3.1 PGE Details

3.1.1 Responsible Persons

Table 3-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

3.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 3-1.

3.1.3 Parent PGE(s)

Not applicable.

3.1.4 Target PGE(s)

Table 3-2. Target PGEs after CER11.1P3

PGEName	Description
CER11.2P1	Sort and Merge Gridded Geostationary Narrowband Radiances, 1st pass

3.2 Operating Environment

3.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 3.4.2).

Table 3-3. Automated Runtime Parameters for CER11.1P3

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P3[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	1
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P3 environment variable is set to the name of Meteosat satellite (e.g. METEO-6).

3.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 3.4.3).

.

Table 3-4. Runtime Parameters for CER11.1P3

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P3[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	1
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])

a. The $SS11_1P3 environment variable is set to the name of Meteosat satellite (e.g. METEO-6).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and Meteosat image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 3.3.1).
Ex 1: "B1MET6.0{0[1-9],1[0-9],2[0-9]},3[0-9]}.199801" for the first 39 images of Jan 1998.
Ex 2: "B1MET6.2??.199712 B1MET6.???.199801 B1MET6.00?.199802" for the entire month of Jan 1998.
[NOTE: If there are no other Meteosat files in the input directory, then "B1MET6.*.*" would be a sufficient description of the input image files.]
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

3.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P3 **Sampling Strategy, PGEs CER11.1P3 and CER11.1P7 (METEOSAT)**
SS11 **Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M **Production Strategy, Subsystem 11 Main Processors**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**

SW11 Software SCCR#, Subsystem 11
DATA11 Data SCCR#, Subsystem 11

3.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

3.2.5 Memory/Disk Space/Time Requirements

Memory: 25 MB
Disk Space: 1.5 GB
Total Run Time: 22.5 hrs

3.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

3.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

3.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for METEOSAT

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the satellite and the date:
- B1MET{nn}.D{yy}.{mm}.F0{xxx}
- B1MET{nn}.D{mm}.{yy}.F0{xxx}
- ISCCP.B1.0.MET-{n}.{yyyy}.{mm}.{dd}.{hh}.{mn}.EUM

where
n = satellite number (e.g. 6 for METEO-6)

nn = satellite number (e.g. 06 for METEO-6)
xxx = 3-digit image number (1 - 248), see Note below
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

[Note: The number "xxx" in the first two naming conventions represents the number of image files. This number may exceed 248 due to the presence of header files included among the image files with the same file naming convention. All such files should be staged for processing.]

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the NOAA National Climate Data Center (NCDC).

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **4.75 MB x 256 hrs**

3.4 Operating Procedures (Procedure for each part of the processor's elements)

3.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

3.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 3.4.3 through 3.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 3.4, or else he/she can skip this Section (3.4.2) and start with the procedures in Section 3.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the Meteosat image files follow the naming convention shown in Section 3.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 3-3)

1. satName (***METEO-6***, or name of Meteosat satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this. If you complete the instructions above, the remainder of Section 3.4 can be skipped.

3.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 3-4)

1. satName (***METEO-6***, or name of Meteosat satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]
6. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the Meteosat input file naming conventions shown in Section 3.3.1-a.

7. character string of image files (e.g. ***"B1MET6.*.*"***)
   [NOTE: This argument is required if the Meteosat image files do not conform to the naming convention. The example above assumes that only the Meteosat input files for the month being processed are in the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=1)*
["*image files ...*"]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P3_PCFin_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

3.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 3.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P3_PCF_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

3.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 3.4.4.

3.4.6 Special Case Considerations

N/A at this time.

3.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> cd $CERESHOME/ggeo/bin
> clean_ggeomain.csh *satName yyyy mm dd controlFlag(=1)*

where ***satName***, ***yyyy***, ***mm***, ***dd,*** and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 3.4.3).

NOTE: The environment variables in Section 3.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

3.5 Execution Evaluation

3.5.1 Exit Code

CER11.1P3 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 3-5.

Table 3-5. Exit Codes for CER11.1P3

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

3.5.2 Screen Messages (Use Table format for large number of messages)

None.

3.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P3_LogReport_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P3_LogStatus_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P3_LogUser_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

3.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

3.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

3.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 3-6. Expected Output File Listing for CER11.1P3 (1 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRANp_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRPp_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPWp_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER_ColdCLDp_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm

Table 3-6. Expected Output File Listing for CER11.1P3 (2 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_NoonDATAp_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER11.1P3_PCFin_{SS11_1P3_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P3_PCF_{SS11_1P3_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P3_LogReport_{SS11_1P3_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P3_LogStatus_{SS11_1P3_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P3_LogUser_{SS11_1P3_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

3.7 Expected Temporary Files/Directories

Table 3-7. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P3}_{PS11_M}

4.0 PGEName: CER11.1P4

Grid Geostationary Narrowband Radiances Main Processor (1st pass), GMS

This PGE processes narrowband data from the GMS satellite. The current GMS satellite is GMS-5.

4.1 PGE Details

4.1.1 Responsible Persons

Table 4-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

4.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 4-1.

4.1.3 Parent PGE(s)

Not applicable.

4.1.4 Target PGE(s)

Table 4-2. Target PGEs after CER11.1P4

PGEName	Description
CER11.2P1	Sort and Merge Gridded Geostationary Narrowband Radiances, 1st pass

4.2 Operating Environment

4.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 4.4.2).

Table 4-3. Automated Runtime Parameters for CER11.1P4

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P4[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	1
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P4 environment variable is set to the name of GMS satellite (e.g. GMS-5)

4.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 4.4.3).

Table 4-4. Runtime Parameters for CER11.1P4 (1 of 2)

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P2[a]
dataYear (yyyy)	Data year	4-digit	valid year number

Table 4-4. Runtime Parameters for CER11.1P4 (2 of 2)

Parameter	Description	Data Type	Valid Values
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	1
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])

a. The $SS11_1P4 environment variable is set to the name of GMS satellite (e.g. GMS-5).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and GMS image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 4.3.1).
Ex 1: "B1GMS5.0{0[1-9],1[0-9],2[0-9]},3[0-9]}.199801" for the first 39 images of Jan 1998.
Ex 2: "B1GMS5.2??.199712 B1GMS5.???.199801 B1GMS5.00?.199802" for the entire month of Jan 1998.
[NOTE: If there are no other GMS files in the input directory, then "B1GMS5.*.*" would be a sufficient description of the input image files.]
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

4.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P4 Sampling Strategy, PGEs CER11.1P4 and CER11.1P8 (GMS)
SS11 Sampling Strategy, Subsystem 11 Postprocessor
PS11_M Production Strategy, Subsystem 11 Main Processors
PS11 Production Strategy, Subsystem 11 Postprocessor
CC11 Configuration Code, Subsystem 11
SW11 Software SCCR#, Subsystem 11
DATA11 Data SCCR#, Subsystem 11

4.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

4.2.5 Memory/Disk Space/Time Requirements

Memory:	**23 MB**
Disk Space:	**1.4 GB**
Total Run Time:	**21.1 hrs**

4.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

4.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

4.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for GMS

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the satellite and the date:
- **B1GMS{nn}.D{yy}.{mm}.F0{xxx}**
- **B1GMS{nn}.D{mm}.{yy}.F0{xxx}**
- **ISCCP.B1.0.GMS-{n}.{yyyy}.{mm}.{dd}.{hh}.{mn}.EUM**

where
n = satellite number (e.g. 5 for GMS-5)
nn = satellite number (e.g. 05 for GSM-5)
xxx = 3-digit image number (1 - 248), see Note below
yyyy = 4-digit year
mm = 2-digit month

dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

[Note: The number "xxx" in the first two naming conventions, represents the number of image files. This number may exceed 248 due to the presence of header files included among the image files with the same file naming convention. All such files should be staged for processing.]

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the NOAA National Climate Data Center (NCDC).

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **4.75 MB x 256 hrs**

4.4 Operating Procedures (Procedure for each part of the processor's elements)

4.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

4.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 4.4.3 through 4.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 4.4, or else he/she can skip this Section (4.4.2) and start with the procedures in Section 4.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the GMS image files follow the naming convention shown in Section 4.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 4-3)

1. satName (***GMS-5***, or name of GMS satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this.

If you complete the instructions above, the remainder of Section 4.4 can be skipped.

4.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 4-4)

1. satName (***GMS-5***, or name of GMS satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]
6. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the GMS input file naming conventions shown in Section 4.3.1-a.

7. character string of image files (e.g. ***"B1GMS5.*.*"***)
   [NOTE: This argument is required if the GMS image files do not conform to the naming convention. The example above assumes that only the GMS input files for the month being processed are in the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=1)***
[*"image files ..."*]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P4_PCFin_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

4.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo***

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 4.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P4_PCF_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

4.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile***

where ***PCFile*** is the name of the Main Processor PCF generated in Section 4.4.4.

4.4.6 Special Case Considerations

N/A at this time.

4.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=1)***

where ***satName***, ***yyyy***, ***mm***, ***dd,*** and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 4.4.3).

NOTE: The environment variables in Section 4.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

4.5 Execution Evaluation

4.5.1 Exit Code

CER11.1P4 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 4-5.

Table 4-5. Exit Codes for CER11.1P4

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

4.5.2 Screen Messages (Use Table format for large number of messages)

None.

4.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P4_LogReport_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P4_LogStatus_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P4_LogUser_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

4.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

4.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

4.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 4-6. Expected Output File Listing for CER11.1P4

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRANp_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRPp_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPWp_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER_ColdCLDp_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_NoonDATAp_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER11.1P4_PCFin_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P4_PCF_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P4_LogReport_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	5	1	n/a	Archive, rm
CER11.1P4_LogStatus_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P4_LogUser_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

4.7 Expected Temporary Files/Directories

Table 4-7. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P4}_{PS11_M}

5.0 PGEName: CER11.1P5

Grid Geostationary Narrowband Radiances Main Processor (2nd pass), GOES-East

This PGE processes narrowband data from the GOES-East satellite. The current GOES-East satellite is GOES-8.

5.1 PGE Details

5.1.1 Responsible Persons

Table 5-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

5.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 5-1.

5.1.3 Parent PGE(s)

Table 5-2. Parent PGEs for CER11.1P5

PGEName	Description
CER11.3P1	Recalibrate GGEO Input Radiance Data
CER4.1-4.0P1	Derive Snow and Ice Maps
CER12.1P1	Regrid MOA Subsystem

5.1.4 Target PGE(s)

Table 5-3. Target PGEs after CER11.1P5

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass

5.2 Operating Environment

5.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 5.4.2).

Table 5-4. Automated Runtime Parameters for CER11.1P5

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P1[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P1 environment variable is set to the name of GOES-East satellite (e.g. GOES-8).

5.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 5.4.3).

Table 5-5. Runtime Parameters for CER11.1P5

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P1[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])
controlFlag	Flag indicating first or second pass processing.	int	2
orbitFiles[g]	Names of files containing orbit information for geolocating image data	character string	(see footnotes [h] and [f])

a. The $SS11_1P1 environment variable is set to the name of GOES-East satellite (e.g. GOES-8).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and GOES-East image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 5.3.1).
Ex 1: "B1199801{0[6-9],10}*" for days 6 thru 10
Ex 2: "B119971231* B1199801* B119980201*" for the entire month of Jan 1998 (including the overlap hours from the preceding and following months).
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.
g. Optional. If orbit file names not listed, script will use startDay and endDay arguments, and GOES-East orbital file naming convention to find orbital files located in ***$(CERESHOME)/ggeo/data/input*** directory.
h. Same as footnote (e), except the names of the orbital files begin with "OA" instead of "B1".

5.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A Langley TRMM Information System (LaTIS) start-up script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P1	**Sampling Strategy, PGEs CER11.1P1 and CER11.1P5 (GOES-East)**
SS11	**Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M	**Production Strategy, Subsystem 11 Main Processors**
PS11	**Production Strategy, Subsystem 11 Postprocessor**
CC11	**Configuration Code, Subsystem 11**
SW11	**Software SCCR#, Subsystem 11**
DATA11	**Data SCCR#, Subsystem 11**

This PGE uses the ASCII file generator script from the Clouds subsystem PGEs CER4.1P1 and P2. Therefore, environment variables needed by those PGEs must be defined for this PGE also.

5.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

5.2.5 Memory/Disk Space/Time Requirements

Memory:	**31 MB**
Disk Space:	**2.3 GB**
Total Run Time:	**40.6 hrs**

5.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

5.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

5.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for GOES-East

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the date:
- B1{yyyy}{mm}{dd}{hh}{mn}
- ISCCP.B1.0.GOE-8.{yyyy}.{mm}.{hh}.{mn}.MSC
- ISCCP.B1.0.GOES-8.{yyyy}.{mm}.{hh}.{mn}.MSC

where
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

1. Mandatory/Optional: **Mandatory. For each image file, there must be a corresponding orbital file. Image files without a corresponding orbital file should be excluded.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data and orbital files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the Canadian Atmospheric Environmental Services (AES)

c. Alternate Data Set, if one exists (maximum waiting period): Not Applicable (**N/A)**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **8.7 MB x 256 hrs**

5.3.2 Input Dataset Name (#2): ISCCP B1 Level image orbital file

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the date:
- OA{yyyy}{mm}{dd}{hh}{mn}
- ISCCP.OA.0.GOE-8.{yyyy}.{mm}.{hh}.{mn}.MSC
- ISCCP.OA.0.GOES-8.{yyyy}.{mm}.{hh}.{mn}.MSC

where
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

Mandatory/Optional: **For every image data file (see** Section 5.3.1**), an orbital file with corresponding date/time is Mandatory. Orbital files that do not have a corresponding image file should be excluded.**

1. Mandatory/Optional: **Mandatory. For every image data file (see** Section 5.3.1**), an orbital file with corresponding date/time must be present. Orbital files without a corresponding image file should be excluded.**
2. Time Related Dependency: **Same as in** Section 5.3.1**.**
3. Waiting Period: **Same as in** Section 5.3.1**.**

b. Source of Information (Source PGE name or Ingest Source):

Same as in Section 5.3.1**.**

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **3007 bytes x 256 hours**

5.3.3 Input Dataset Name (#3): MOA

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The MOA files should cover all the hours represented by the image files. If the MOA files do not occur at the same frequency as the**

image files (e.g. the 6-hourly ECMWF files), then each image file which doesn't have a corresponding MOA file, should be "sandwiched" between two consecutive MOA files.

Because of the way GGEO currently interfaces to the Clouds subsystem, it is necessary to load the first MOA file (day 01, hour 00) of the month being processed for each GGEO job.

As a general rule, when processing a month through GGEO, it is safe to load all the MOA files for the entire month, along with overlap files covering the last day of the preceding month and the first day of the following month, and to leave the files loaded until all the Main Processor jobs for that month have completed processing.

3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **43.8 x 128 hours**

5.3.4 Input Dataset Name (#4): ESNOW

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

5.3.5 Input Dataset Name (#5): EICE

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_EICE_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

5.4 Operating Procedures (Procedure for each part of the processor's elements)

5.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

5.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 5.4.3 through 5.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 5.4, or else he/she can skip this Section (5.4.2) and start with the procedures in Section 5.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the GOES-East image and orbital files follow the naming conventions shown in Section 5.3.1-a and Section 5.3.2-a, respectively. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 5-4)

1. satName (***GOES-8***, or name of GOES-East satellite for data being processed)
2. 4-digit dataYear (***yyyy***)

3. 2-digit dataMonth (***mm***)
4. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this. If you complete the instructions above, the remainder of Section 5.4 can be skipped.

5.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 5-5)

1. satName (***GOES-8***, or name of GOES-East satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]

6. controlFlag: [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]

The following two arguments are optional. If they are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the GOES-East input file naming conventions shown in Sections 5.3.1-a and 5.3.2-a.

7. character string of image files (e.g. ***"B1199712311145 B1199801*"***)
   [NOTE: This argument is required if the GOES-East image files do not conform to the naming convention.]
8. character string of orbital files (e.g. ***"OA199712311145 OA199801*"***)
   [NOTE: This argument is required if the GOES-East image files do not conform to the naming convention.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=2)*
["*image files ...*" "*orbital files ...*"]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P5_PCFin_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

5.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 5.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P5_PCF_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

5.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 5.4.4.

5.4.6 Special Case Considerations

N/A at this time.

5.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=2)***

where ***satName***, ***yyyy***, ***mm***, ***dd,*** and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 5.4.3).

NOTE: The environment variables in Section 5.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

5.5 Execution Evaluation

5.5.1 Exit Code

CER11.1P5 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 5-6.

Table 5-6. Exit Codes for CER11.1P5

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

5.5.2 Screen Messages (Use Table format for large number of messages)

None.

5.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P5_LogReport_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P5_LogStatus_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P5_LogUser_{$SS11_1P1}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}
   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

5.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

5.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

5.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 5-7. Expected Output File Listing for CER11.1P5

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRAN_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRP_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPW_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd) @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.1P5_PCFin_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P5_PCF_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P5_LogReport_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	3	1	n/a	Archive, rm
CER11.1P5_LogStatus_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	10	1	n/a	Archive, rm
CER11.1P5_LogUser_{SS11_1P1}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

5.7 Expected Temporary Files/Directories

Table 5-8. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P1}_{PS11_M}

6.0 PGEName: CER11.1P6

Grid Geostationary Narrowband Radiances Main Processor (2nd pass), GOES-West

This PGE processes narrowband data from the GOES-West satellite. The current GOES-West satellite is GOES-10.

6.1 PGE Details

6.1.1 Responsible Persons

Table 6-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

6.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 6-1.

6.1.3 Parent PGE(s)

Table 6-2. Parent PGEs for CER11.1P6

PGEName	Description
CER11.3P1	Recalibrate GGEO Input Radiance Data
CER4.1-4.0P1	Derive Snow and Ice Maps
CER12.1P1	Regrid MOA Subsystem

6.1.4 Target PGE(s)

Table 6-3. Target PGEs after CER11.1P6

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass

6.2 Operating Environment

6.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 6.4.2).

Table 6-4. Automated Runtime Parameters for CER11.1P6

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P2[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P2 environment variable is set to the name of GOES-West satellite (e.g. GOES-10).

6.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 6.4.3).

Table 6-5. Runtime Parameters for CER11.1P6

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P2[a].
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	2
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])

a. The $SS11_1P2 environment variable is set to the name of GOES-West satellite (e.g. GOES-10).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and GOES-West image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 6.3.1).
Ex 1: "980{0[6-9],10}*.B1D" for days 6 thru 10 of Jan 1998.
Ex 2: "980{3[1-9],4[0-9],5[0-9]}*.B1D" for the entire month of Feb 1998 (days of the year, 31 through 58) including the overlap hours from the preceding and following months. [NOTE: If there are no other GOES-West files in the input directory, then "98*.B1D" would be a sufficient description of the input image files.]
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

6.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P2	**Sampling Strategy, PGEs CER11.1P2 and CER11.1P6 (GOES-West)**
SS11	**Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M	**Production Strategy, Subsystem 11 Main Processors**
PS11	**Production Strategy, Subsystem 11 Postprocessor**
CC11	**Configuration Code, Subsystem 11**
SW11	**Software SCCR#, Subsystem 11**
DATA11	**Data SCCR#, Subsystem 11**

This PGE uses the ASCII file generator script from the Clouds subsystem PGEs CER4.1P1 and P2. Therefore, environment variables needed by those PGEs must be defined for this PGE also.

6.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

6.2.5 Memory/Disk Space/Time Requirements

Memory:	**805 MB**
Disk Space:	**2.9 GB**
Total Run Time:	**45.2 hrs**

6.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

6.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

6.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for GOES-West

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are two different naming conventions used, depending on the date:

- {yy}{ddd}{hh}{mn}{ss}i{sat}.B1D
- {yyyy}{ddd}{hh}{mn}{ss}i{sat}.B1D

where
yy = 2-digit year (e.g. 98 for 1998)
yyyy = 4-digit year (e.g. 2000)
ddd = 3-digit day-of-year
hh = 2-digit hour-of-day
mn = 2-digit minute
ss = 2-digit second
sat = 2-digit satellite number (e.g. 09 for GOES-9, 10 for GOES-10, etc.)

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **11 MB x 256 hrs**

6.3.2 Input Dataset Name (#2): MOA

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The MOA files should cover all the hours represented by the image files. If the MOA files do not occur at the same frequency as the**

image files (e.g. the 6-hourly ECMWF files), then each image file which doesn't have a corresponding MOA file, should be "sandwiched" between two consecutive MOA files.

Because of the way GGEO currently interfaces to the Clouds subsystem, it is necessary to load the first MOA file (day 01, hour 00) of the month being processed for each GGEO job.

As a general rule, when processing a month through GGEO, it is safe to load all the MOA files for the entire month, along with overlap files covering the last day of the preceding month and the first day of the following month, and to leave the files loaded until all the Main Processor jobs for that month have completed processing.

3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **43.8 x 128 hours**

6.3.3 Input Dataset Name (#3): ESNOW

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

6.3.4 Input Dataset Name (#4): EICE

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_EICE_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

6.4 Operating Procedures (Procedure for each part of the processor's elements)

6.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

6.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 6.4.3 through 6.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 6.4, or else he/she can skip this Section (6.4.2) and start with the procedures in Section 6.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the GOES-West image files follow the naming convention shown in Section 6.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 6-4)

1. satName (***GOES-10***, or name of GOES-West satellite for data being processed)
2. 4-digit dataYear (***yyyy***)

3. 2-digit dataMonth (***mm***)
4. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this.

If you complete the instructions above, the remainder of Section 6.4 can be skipped.

6.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 6-5)

1. satName (***GOES-10***, or name of GOES-West satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]

6. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the GOES-West input file naming conventions shown in Section 6.3.1-a.

7. character string of image files (e.g. ***"97*.B1D 98*.B1D"***)
   [NOTE: This argument is required if the GOES-West image files do not conform to the naming convention. The example above assumes that only the GOES-West input files for the month being processed are in the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=2)*
["*image files ...*"]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P6_PCFin_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

6.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 6.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P6_PCF_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

6.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 6.4.4.

6.4.6 Special Case Considerations

N/A at this time.

6.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=2)***

where ***satName***, ***yyyy***, ***mm***, ***dd,*** and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 6.4.3).

NOTE: The environment variables in Section 6.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

6.5 Execution Evaluation

6.5.1 Exit Code

CER11.1P6 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 6-6.

Table 6-6. Exit Codes for CER11.1P6

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

6.5.2 Screen Messages (Use Table format for large number of messages)

None.

6.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P6_LogReport_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P6_LogStatus_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P6_LogUser_{$SS11_1P2}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

6.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

6.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

6.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 6-7. Expected Output File Listing for CER11.1P6

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRAN_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRP_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPW_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd) @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.1P6_PCFin_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P6_PCF_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P6_LogReport_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	3	1	n/a	Archive, rm
CER11.1P6_LogStatus_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P6_LogUser_{SS11_1P2}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

6.7 Expected Temporary Files/Directories

Table 6-8. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P2}_{PS11_M}

7.0 PGEName: CER11.1P7

Grid Geostationary Narrowband Radiances Main Processor (2nd pass), Meteosat

This PGE processes narrowband data from the Meteosat satellite. The current Meteosat satellite is METEO-6.

7.1 PGE Details

7.1.1 Responsible Persons

Table 7-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

7.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 7-1.

7.1.3 Parent PGE(s)

Table 7-2. Parent PGEs for CER11.1P7

PGEName	Description
CER11.3P1	Recalibrate GGEO Input Radiance Data
CER4.1-4.0P1	Derive Snow and Ice Maps
CER12.1P1	Regrid MOA Subsystem

7.1.4 Target PGE(s)

Table 7-3. Target PGEs after CER11.1P7

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass

7.2 Operating Environment

7.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 7.4.2).

Table 7-4. Automated Runtime Parameters for CER11.1P7

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P3[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P3 environment variable is set to the name of Meteosat satellite (e.g. METEO-6).

7.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 7.4.3).

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Table 7-5. Runtime Parameters for CER11.1P7

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P3[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	2
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])

a. The $SS11_1P3 environment variable is set to the name of Meteosat satellite (e.g. METEO-6).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and Meteosat image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 7.3.1).
Ex 1: "B1MET6.0{0[1-9],1[0-9],2[0-9]},3[0-9]}.199801" for the first 39 images of Jan 1998.
Ex 2: "B1MET6.2??.199712 B1MET6.???.199801 B1MET6.00?.199802" for the entire month of Jan 1998.
[NOTE: If there are no other Meteosat files in the input directory, then "B1MET6.*.*" would be a sufficient description of the input image files.]
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

7.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P3	**Sampling Strategy, PGEs CER11.1P3 and CER11.1P7 (METEOSAT)**
SS11	**Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M	**Production Strategy, Subsystem 11 Main Processors**
PS11	**Production Strategy, Subsystem 11 Postprocessor**
CC11	**Configuration Code, Subsystem 11**
SW11	**Software SCCR#, Subsystem 11**
DATA11	**Data SCCR#, Subsystem 11**

This PGE uses the ASCII file generator script from the Clouds subsystem PGEs CER4.1P1 and P2. Therefore, environment variables needed by those PGEs must be defined for this PGE also.

7.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

7.2.5 Memory/Disk Space/Time Requirements

Memory:	**25 MB**
Disk Space:	**1.5 GB**
Total Run Time:	**55.2 hrs**

7.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

7.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

7.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for METEOSAT

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the satellite and the date:
- B1MET{nn}.D{yy}.{mm}.F0{xxx}
- B1MET{nn}.D{mm}.{yy}.F0{xxx}
- ISCCP.B1.0.MET-{n}.{yyyy}.{mm}.{dd}.{hh}.{mn}.EUM

where
n = satellite number (e.g. 6 for METEO-6)
nn = satellite number (e.g. 06 for METEO-6)
xxx = 3-digit image number (1 - 248), see Note below
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

[Note: The number "xxx" in the first two naming conventions represents the number of image files. This number may exceed 248 due to the presence of header files included among the image files with the same file naming convention. All such files should be staged for processing.]

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the NOAA National Climate Data Center (NCDC).

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **4.75 MB x 256 hrs**

7.3.2 Input Dataset Name (#2): MOA

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The MOA files should cover all the hours represented by the image files. If the MOA files do not occur at the same frequency as the image files (e.g. the 6-hourly ECMWF files), then each image file which doesn't have a corresponding MOA file, should be "sandwiched" between two consecutive MOA files.**

   Because of the way GGEO currently interfaces to the Clouds subsystem, it is necessary to load the first MOA file (day 01, hour 00) of the month being processed for each GGEO job.

   As a general rule, when processing a month through GGEO, it is safe to load all the MOA files for the entire month, along with overlap files covering the last day of the preceding month and the first day of the following month, and to leave the files loaded until all the Main Processor jobs for that month have completed processing.
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **43.8 x 128 hours**

7.3.3 Input Dataset Name (#3): ESNOW

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

7.3.4 Input Dataset Name (#4): EICE

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_EICE_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

7.4 Operating Procedures (Procedure for each part of the processor's elements)

7.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

7.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 7.4.3 through 7.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 7.4, or else he/she can skip this Section (7.4.2) and start with the procedures in Section 7.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the Meteosat image files follow the naming convention shown in Section 7.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 7-4)

1. satName (***METEO-6***, or name of Meteosat satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this. If you complete the instructions above, the remainder of Section 7.4 can be skipped.

7.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 7-5)

1. satName (***METEO-6***, or name of Meteosat satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]
6. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the Meteosat input file naming conventions shown in Section 7.3.1-a.

7. character string of image files (e.g. ***"B1MET6.*.*"***)
   [NOTE: This argument is required if the Meteosat image files do not conform to the naming convention. The example above assumes that only the Meteosat input files for the month being processed are in the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=2)*
["*image files ...*"]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P7_PCFin_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

7.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 7.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P7_PCF_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

7.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile***

where ***PCFile*** is the name of the Main Processor PCF generated in Section 7.4.4.

7.4.6 Special Case Considerations

N/A at this time.

7.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=2)***

where ***satName***, ***yyyy***, ***mm***, ***dd***, and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 7.4.3).

NOTE: The environment variables in Section 7.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

7.5 Execution Evaluation

7.5.1 Exit Code

CER11.1P7 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 7-6.

Table 7-6. Exit Codes for CER11.1P7

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

7.5.2 Screen Messages (Use Table format for large number of messages)

None.

7.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P7_LogReport_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P7_LogStatus_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P7_LogUser_{$SS11_1P3}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

7.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

7.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

7.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 7-7. Expected Output File Listing for CER11.1P7

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRAN_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRP_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPW_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd) @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.1P7_PCFin_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P7_PCF_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P7_LogReport_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	3	1	n/a	Archive, rm
CER11.1P7_LogStatus_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P7_LogUser_{SS11_1P3}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

7.7 Expected Temporary Files/Directories

Table 7-8. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P3}_{PS11_M}

8.0 PGEName: CER11.1P8

Grid Geostationary Narrowband Radiances Main Processor (2nd pass), GMS

This PGE processes narrowband data from the GMS satellite. The current GMS satellite is GMS-5.

8.1 PGE Details

8.1.1 Responsible Persons

Table 8-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

8.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 8-1.

8.1.3 Parent PGE(s)

Table 8-2. Parent PGEs for CER11.1P8

PGEName	Description
CER11.3P1	Recalibrate GGEO Input Radiance Data
CER4.1-4.0P1	Derive Snow and Ice Maps
CER12.1P1	Regrid MOA Subsystem

8.1.4 Target PGE(s)

Table 8-3. Target PGEs after CER11.1P8

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass

8.2 Operating Environment

8.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 8.4.2).

Table 8-4. Automated Runtime Parameters for CER11.1P8

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P4[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

a. The $SS11_1P4 environment variable is set to the name of GMS satellite (e.g. GMS-5).

8.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 8.4.3).

Table 8-5. Runtime Parameters for CER11.1P8

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	$SS11_1P2[a]
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[b]
endDay	End day in range of days in month to be processed	2-digit	00-31[c]
controlFlag	Flag indicating first or second pass processing.	int	2
imageFiles[d]	Image file names	character string	(see footnotes [e] and [f])

a. The $SS11_1P4 environment variable is set to the name of GMS satellite (e.g. GMS-5).
b. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
c. If startDay equals "00", then the endDay value is ignored.
d. Optional. If image file names not listed, script will use startDay and endDay arguments, and GMS image file naming convention to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
e. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 8.3.1).
Ex 1: "B1GMS5.0{0[1-9],1[0-9],2[0-9]},3[0-9]}.199801" for the first 39 images of Jan 1998.
Ex 2: "B1GMS5.2??.199712 B1GMS5.???.199801 B1GMS5.00?.199802" for the entire month of Jan 1998.
[NOTE: If there are no other GMS files in the input directory, then "B1GMS5.*.*" would be a sufficient description of the input image files.]
f. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

8.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P4 Sampling Strategy, PGEs CER11.1P4 and CER11.1P8 (GMS)
SS11 Sampling Strategy, Subsystem 11 Postprocessor

PS11_M	**Production Strategy, Subsystem 11 Main Processors**
PS11	**Production Strategy, Subsystem 11 Postprocessor**
CC11	**Configuration Code, Subsystem 11**
SW11	**Software SCCR#, Subsystem 11**
DATA11	**Data SCCR#, Subsystem 11**

This PGE uses the ASCII file generator script from the Clouds subsystem PGEs CER4.1P1 and P2. Therefore, environment variables needed by those PGEs must be defined for this PGE also.

8.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take approximately 24 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

8.2.5 Memory/Disk Space/Time Requirements

Memory:	**23 MB**
Disk Space:	**1.4 GB**
Total Run Time:	**40.9 hrs**

8.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

8.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

8.3.1 Input Dataset Name (#1): ISCCP B1 Level image data file for GMS

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

There are three different naming conventions used, depending on the satellite and the date:

- B1GMS{nn}.D{yy}.{mm}.F0{xxx}
- B1GMS{nn}.D{mm}.{yy}.F0{xxx}
- ISCCP.B1.0.GMS-{n}.{yyyy}.{mm}.{dd}.{hh}.{mn}.JMA

where
n = satellite number (e.g. 5 for GMS-5)
nn = satellite number (e.g. 05 for GSM-5)
xxx = 3-digit image number (1 - 248), see Note below
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hh = 2-digit hour
mn = 2-digit minute

[Note: The number "xxx" in the first two naming conventions, represents the number of image files. This number may exceed 248 due to the presence of header files included among the image files with the same file naming convention. All such files should be staged for processing.]

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process when image data files are available and process is requested. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

Data are ingested by DAAC from the NOAA National Climate Data Center (NCDC).

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **4.75 MB x 256 hrs**

8.3.2 Input Dataset Name (#2): MOA

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The MOA files should cover all the hours represented by the image files. If the MOA files do not occur at the same frequency as the image files (e.g. the 6-hourly ECMWF files), then each image file which doesn't have a corresponding MOA file, should be "sandwiched" between two consecutive MOA files.**

   Because of the way GGEO currently interfaces to the Clouds subsystem, it is necessary to load the first MOA file (day 01, hour 00) of the month being processed for each GGEO job.

   As a general rule, when processing a month through GGEO, it is safe to load all the MOA files for the entire month, along with overlap files covering the last day of the preceding month and the first day of the following month, and to leave the files loaded until all the Main Processor jobs for that month have completed processing.
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **43.8 x 128 hours**

8.3.3 Input Dataset Name (#3): ESNOW

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

8.3.4 Input Dataset Name (#4): EICE

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_EICE_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

8.4 Operating Procedures (Procedure for each part of the processor's elements)

8.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

8.4.2 Automated Procedures

The **run_month_ggeomain.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 8.4.3 through 8.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 8.4, or else he/she can skip this Section (8.4.2) and start with the procedures in Section 8.4.3.

Before executing the **run_month_ggeomain.csh** script, first verify that the GMS image files follow the naming convention shown in Section 8.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.

The **run_month_ggeomain.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 8-4)

1. satName (***GMS-5***, or name of GMS satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeomain.csh [*satName yyyy mm controlFlag numJobs cleanupFlag runMode* (*numBATCHjobs*)]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this. If you complete the instructions above, the remainder of Section 8.4 can be skipped.

8.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 8-5)

1. satName (***GMS-5***, or name of GMS satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]
6. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the GMS input file naming conventions shown in Section 8.3.1-a.

7. character string of image files (e.g. ***"B1GMS5.*.*"***)
   [NOTE: This argument is required if the GMS image files do not conform to the naming convention. The example above assumes that only the GMS input files for the month being processed are in the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_input_ggeomain.csh *satName yyyy mm startDay endDay controlFlag(=2)***
[*"image files ..."*]

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P8_PCFin_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

8.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_pcf_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFinfo***

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 8.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P8_PCF_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

8.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile***

where ***PCFile*** is the name of the Main Processor PCF generated in Section 8.4.4.

8.4.6 Special Case Considerations

N/A at this time.

8.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **cd $CERESHOME/ggeo/bin**
> **clean_ggeomain.csh *satName yyyy mm dd controlFlag(=2)***

where ***satName***, ***yyyy***, ***mm***, ***dd***, and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 8.4.3).

NOTE: The environment variables in Section 8.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

8.5 Execution Evaluation

8.5.1 Exit Code

CER11.1P8 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 8-6.

Table 8-6. Exit Codes for CER11.1P8

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

8.5.2 Screen Messages (Use Table format for large number of messages)

None.

8.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P8_LogReport_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P8_LogStatus_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P8_LogUser_{$SS11_1P4}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

8.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

8.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

8.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 8-7. Expected Output File Listing for CER11.1P8

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRAN_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P1	Archive
CER_OQCRP_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPW_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.1P8_PCFin_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P8_PCF_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P8_LogReport_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	8	1	n/a	Archive, rm
CER11.1P8_LogStatus_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P8_LogUser_{SS11_1P4}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

8.7 Expected Temporary Files/Directories

Table 8-8. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P4}_{PS11_M}

9.0 PGEName: CER11.1P10

Grid Geostationary Narrowband Radiances Main Processor (2nd pass), McIDAS Data Flat Files

This PGE processes narrowband McIDAS data flat files for all satellites.

9.1 PGE Details

9.1.1 Responsible Persons

Table 9-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

9.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 9-1.

9.1.3 Parent PGE(s)

Table 9-2. Parent PGEs for CER11.1P10

PGEName	Description
CER4.1-4.0P1	Derive Snow and Ice Maps
CER12.1P1	Regrid MOA Subsystem

9.1.4 Target PGE(s)

Table 9-3. Target PGEs after CER11.1P10

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass

9.2 Operating Environment

9.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 9.4.2).

Table 9-4. Automated Runtime Parameters for CER11.1P10

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	GOES-8, GOES-9, GOES-10, GOES-12, GMS-5, METEO-5, METEO-6, METEO-7, METEO-8
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2
numJobs	This variable determines the number of jobs to set up per satellite month.	integer	1-n (n = num of days in month)
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x
numBATCHjobs	If (runMode=="b") then this determines the number of batch jobs to run concurrently.	integer	1-n (n = num of days in month)

9.2.2 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 9.4.3).

Table 9-5. Runtime Parameters for CER11.1P10

Parameter	Description	Data Type	Valid Values
satName	Satellite name	character	GOES-8, GOES-9, GOES-10, GOES-12, GMS-5, METEO-5, METEO-6, METEO-7, METEO-8
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
startDay (dd)	Start day in range of days in month to be processed	2-digit	00-31[a]
endDay	End day in range of days in month to be processed	2-digit	00-31[b]
controlFlag	Flag indicating first or second pass processing.	int	2
imageFiles[c]	Image file names	character string	(see footnotes [d] and [e])

a. Use "00" if processing the entire month in a single run; otherwise, use the two-digit representation of the first day being processed.
b. If startDay equals "00", then the endDay value is ignored.
c. Optional. If image file names not listed, script will use startDay and endDay arguments, and the satName to find image files located in ***$(CERESHOME)/ggeo/data/input*** directory.
d. Enclose the list of image file names within quotes. Wildcard characters can be used (see Section 9.3.1).
Ex 1: "MCIDAS.G-09.2005.01.0{1,2,3}.*.bin" for the first 3 days of Jan 2005 GOES-9.
Ex 2: "MCIDAS.MET5.2005.{03.31,04.??,05.01}.*.bin" for the entire month of April 2005 METEO-5
e. Any process that includes the first day of the month must also include the overlap hours (last half day) from the last day of the preceding month, and any process that includes the last day of the month must also include the overlap hours (first half day) from the first day of the following month.

9.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P10	**Sampling Strategy, PGE CER11.1P10**
SS11	**Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M	**Production Strategy, Subsystem 11 Main Processors**
PS11	**Production Strategy, Subsystem 11 Postprocessor**
CC11	**Configuration Code, Subsystem 11**
SW11	**Software SCCR#, Subsystem 11**
DATA11	**Data SCCR#, Subsystem 11**

This PGE uses the ASCII file generator script from the Clouds subsystem PGEs CER4.1P1 and P2. Therefore, environment variables needed by those PGEs must be defined for this PGE also.

Note: Prior to job set-up, the **SS11_1P10** environment variable is set equal to the satellite name. However, in the PCF, the Sampling Strategy is changed to "**MCIDAS-$satname**." This later value is what is represented by the **SS11_1P10** variable in the remainder of this document.

9.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Main Processor can be executed at whatever frequency is most convenient for the operator, including running the entire month as a single job. There are, however, advantages to splitting the month into multiple jobs. For example, if the entire month is run in a single job, it will take between 24-48 hours clock time to complete, whereas by splitting the month into five jobs running simultaneously, the entire month can be processed in less than 5 hours clock time. Also, if an error should occur during the processing of one of the image files for any job, then the entire processing job would need to be rerun. Therefore, if the month is being processed as a single job, then this would mean having to rerun the entire month.

9.2.5 Memory/Disk Space/Time Requirements

Memory:	**23 MB**
Disk Space:	**1.4 GB**
Total Run Time:	**40.9 hrs**

9.2.6 Restrictions Imposed in Processing Order

There is no restriction on processing order. If the month is split into multiple runs, the jobs are completely independent and can be run in any order or simultaneously.

9.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

9.3.1 Input Dataset Name (#1): McIDAS Image data flat files

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

The directory location is **$CERESHOME/ggeo/data/input**

Here is the McIDAS image data flat file naming convention:
- **MCIDAS.{satcode}.{yyyy}.{mm}.{dd}.{hhmm}.{rr}K.bin**

where
satcode = satellite code {e.g. GMS5, G-08, MET5}
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit day
hhmm = 4-digit hour/minute
rr = 2-digit pixel resolution {e.g. 04, 08}

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Any job that includes the image files for the first day of the month must also include the overlap image files covering the last twelve hours of the preceding month. Any job that includes the image files from the last day of the month must also include the overlap image files covering the first twelve hours of the following month. Other than the overlap hours, all image file data dates must fall within the year/month defined by the Runtime Parameters, dataYear and dataMonth. Those that do not meet this criteria will be skipped over during processing.**
3. Waiting Period: **Process as requested when image data files are available. The data for a particular data month are generally available within one week after the end of the month.**

b. Source of Information (Source is PGE name or Ingest Source):

The satellite data streams are downloaded in real time from the University of Wisconsin Space Science and Engineering Center (SSEC) using the Man-computer Interactive Data Access System (McIDAS). The McIDAS-format data is then pre-processed at the DAAC to create binary flat files which are used as input to the GGEO subsystem.

c. Alternate Data Set, if one exists (maximum waiting period): **See Input Dataset #1 for PGEs CER11.1P5-8**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): 4.75 MB x 256 hrs

GMS-5:	9.6 MB x 256 hrs
GOES-8/9/10:	29.6 MB x 256 hrs
GOES-12:	22.8 MB x 256 hrs

METEO-5/7: 12.5 MB x 256 hrs
METEO-8: 15.3 MB x 256 hrs

9.3.2 Input Dataset Name (#2): MOA

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The MOA files should cover all the hours represented by the image files. If the MOA files do not occur at the same frequency as the image files (e.g. the 6-hourly ECMWF files), then each image file which doesn't have a corresponding MOA file, should be "sandwiched" between two consecutive MOA files.**

   Because of the way GGEO currently interfaces to the Clouds subsystem, it is necessary to load the first MOA file (day 01, hour 00) of the month being processed for each GGEO job.

   As a general rule, when processing a month through GGEO, it is safe to load all the MOA files for the entire month, along with overlap files covering the last day of the preceding month and the first day of the following month, and to leave the files loaded until all the Main Processor jobs for that month have completed processing.
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **43.8 x 128 hours**

9.3.3 Input Dataset Name (#3): ESNOW

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**

2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

9.3.4 Input Dataset Name (#4): EICE

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_EICE_$SS4_0_$PS4_0_$CC4_0.YYYYMM01

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Only the file for the first day of the month being processed is required.**
3. Waiting Period: **None. Process when all input data are available.**

b. Source of Information (Source PGE name or Ingest Source):

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **2.333**

9.4 Operating Procedures (Procedure for each part of the processor's elements)

9.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

9.4.2 Automated Procedures

The **run_month_ggeomain_mcidas.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 9.4.3 through 9.4.7. The operator can use this script and by-pass the remainder of the instructions in Section 9.4, or else he/she can skip this Section (9.4.2) and start with the procedures in Section 9.4.3.

Before executing the **run_month_ggeomain_mcidas.csh** script, first verify that the input image files follow the naming convention shown in Section 9.3.1-a. If they do not, then the **run_month_ggeomain.csh** script should not be used.
The **run_month_ggeomain_mcidas.csh** script takes eight command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows: (see Table 9-4)

1. satName (***e.g. GMS-5, GOES-8, METEO-8)***
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]
5. numJobs (***1-5***)
   [NOTE: This value determines how many jobs the satellite month will be split into. If (**numJobs==*1***), then the entire month is run as a single job.]
6. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
7. runMode (***i***, ***b***, or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively, **runMODE=*b*** to run job(s) in batch mode, and **runMode=*x*** to set up the jobs but not run them.]
8. numBATCHjobs
   [Note: This parameter is required only if (**runMode==*b***). The value can be any number between 1 and the number of days in the month being processed.]

To execute the **run_month_ggeomain_mcidas.csh** script, type the following at the command line prompt:

> **> cd $CERESHOME/ggeo/bin**
> **> run_month_ggeomain_mcidas.csh [*satName yyyy mm controlFlag numJobs* \ *cleanupFlag runMode* (*numBATCHjobs*)]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), hen the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this.

If you complete the instructions above, the remainder of Section 9.4 can be skipped.

9.4.3 How to Generate the ASCII File

The Main Processor PCF ASCII file generator requires the following six command line arguments: (see Table 9-5)

1. satName (e.g. GMS-5, GOES-8, METEO-8 GMS satellite for data being processed)
2. 4-digit dataYear (***yyyy***)
3. 2-digit dataMonth (***mm***)
4. 2-digit startDay (***dd***); i.e. the first day in the range of days of the month to process in the job. [NOTE: Use ***0*** (zero) if processing the entire month.]
5. 2-digit endDay; i.e. the last day in the range of days of the month to process in the job. [NOTE: If **startDay==*0***, then the endDay value is ignored, though it still needs to be supplied.]
6. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]

The following argument is optional. If the file names are not supplied, the script will access the appropriate input files from the **$CERESHOME/ggeo/data/input** directory, according to the startDay and endDay arguments and the input file naming conventions shown in Section 9.3.1-a.

7. character string of image files (e.g. ***"MCIDAS.MET7.2002.07.16.1100.04K.bin"***)
   [NOTE: This argument is useful for testing purposes in validation, if for example, the analyst wishes to test with only a single image input without removing other relevant image files from the input directory.]

To generate the Main Processor ASCII file, type the following at the command line prompt:

> **> cd $CERESHOME/ggeo/bin**
> **> gen_input_ggeomain_mcidas.csh *satName yyyy mm startDay endDay* \ *controlFlag(=2)* ["*image files ...*"]**

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P10_PCFin_{$SS11_1P10}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

9.4.4 How to Generate the PCF File

The Main Processor PCF generator uses the PCF ASCII file name as input. To generate the Main Processor PCF, type the following at the command line prompt:

> **> cd $CERESHOME/ggeo/bin**
> **> gen_pcf_ggeomain_mcidas.csh $CERESHOME/ggeo/rcf/*PCFinfo***

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 9.4.3.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.1P10_PCF_{$SS11_1P10}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

9.4.5 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_ggeomain.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 9.4.4.

9.4.6 Special Case Considerations

N/A at this time.

9.4.7 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> cd $CERESHOME/ggeo/bin
> clean_ggeomain_mcidas.csh *satName yyyy mm dd controlFlag(=2)*

where ***satName***, ***yyyy***, ***mm***, ***dd***, and ***controlFlag*** are the same as the first five arguments to the script that generates the Main Processor PCF ASCII file (see Section 9.4.3).

NOTE: The environment variables in Section 9.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

9.5 Execution Evaluation

9.5.1 Exit Code

CER11.1P10 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 9-6.

Table 9-6. Exit Codes for CER11.1P10

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

9.5.2 Screen Messages (Use Table format for large number of messages)

None.

9.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.1P10_LogReport_{$SS11_1P10}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.1P10_LogStatus_{$SS11_1P10}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.1P10_LogUser_{$SS11_1P10}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

9.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

9.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGE, CER11.2P1, can process with any number of input granfiles. However, it cannot process an output granfile from a failed Main Processor. Therefore, all available Main Processor jobs must terminate successfully before the target PGE can be executed.

9.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 9-7. Expected Output File Listing for CER11.1P10 (1 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GRAN_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm}{dd} (.met)@($CERESHOME/ggeo/data/int_prod)	m	178	1	CER 11.2P2	Archive
CER_OQCRP_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm} {dd} (.met)@($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCRPW_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm} {dd}@($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.1P10_PCFin_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy} {mm}{dd}@($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm

Table 9-7. Expected Output File Listing for CER11.1P10 (2 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER11.1P10_PCF_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm}{dd}@($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.1P10_LogReport_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm}{dd}@($CERESHOME/ggeo/data/runlogs)	m	8	1	n/a	Archive, rm
CER11.1P10_LogStatus_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm}{dd}@($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.1P10_LogUser_{SS11_1P10}_{PS11_M}_{CC11}.{yyyy}{mm}{dd}@($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

9.7 Expected Temporary Files/Directories

Table 9-8. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/out_comp/qa_reports	CER_EQCHG_{SS11_1P4}_{PS11_M}

10.0 PGEName: CER11.2P1

Sort and Merge Gridded Geostationary Narrowband Radiances (1st pass)

This PGE merges data from the Main Processor output files.

10.1 PGE Details

10.1.1 Responsible Persons

Table 10-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

10.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 10-1.

10.1.3 Parent PGE(s)

Table 10-2. Parent PGEs for CER11.2P1

PGEName	Description
CER11.1P1- CER11.1P4	Grid Geostationary Narrowband Radiances, 1st pass

10.1.4 Target PGE(s)

Table 10-3. Target PGEs after CER11.2P1

PGEName	Description
CER11.3P1	Recalibrate GGEO Input Radiance Data

10.2 Operating Environment

10.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 10.4.1).

Table 10-4. Automated Runtime Parameters for CER11.2P1

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	1
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x

10.2.2 Runtime Parameter (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 10.4.2).

Table 10-5. Runtime Parameters for CER11.2P1 (1 of 2)

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12

Table 10-5. Runtime Parameters for CER11.2P1 (2 of 2)

Parameter	Description	Data Type	Valid Values
controlFlag	Flag indicating first or second pass processing.	int	1

10.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P1 **Sampling Strategy, PGEs CER11.1P1 and CER11.1P5 (GOES-East)**
SS11_1P2 **Sampling Strategy, PGEs CER11.1P2 and CER11.1P6 (GOES-West)**
SS11_1P3 **Sampling Strategy, PGEs CER11.1P3 and CER11.1P7 (METEOSAT)**
SS11_1P4 **Sampling Strategy, PGEs CER11.1P4 and CER11.1P8 (GMS)**
SS11 **Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M **Production Strategy, Subsystem 11 Main Processors**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**
SW11 **Software SCCR#, Subsystem 11**
DATA11 **Data SCCR#, Subsystem 11**

10.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Post Processor is a monthly processor. It can be executed with any number of granfiles produced from the parent PGEs (CER11.1P1 - CER11.1P4). The default case is to run with granfiles from all four satellites. This run takes about 2 hours.

10.2.5 Memory/Disk Space/Time Requirements

Memory: **1.7 GB**
Disk Space: **1.4 GB**
Total Run Time: **5.1 hrs**

10.2.6 Restrictions Imposed in Processing Order

N/A.

10.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

10.3.1 Input Dataset Name (#1): GGEO granfile

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):
(The number of input granfiles is dependent on the number of Main Processor jobs run for the data month.)

$CERESHOME/ggeo/data/int_prod
CER_GRANp_{$SS11_1Px}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}
where
x = 1, 2, 3, or 4
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit startDay

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The granfiles must be within the year/month defined by the Runtime Parameters dataYear and dataMonth**
3. Waiting Period: **Process when all granfiles are available and process is requested**

b. Source of Information (Source is PGE name or Ingest Source):

CER11.1P1 - CER11.1P4

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **178 MB/satellite/month**

10.4 Operating Procedures (Procedure for each part of the processor's elements)

This PGE can be processed with any number of granfiles. All the available granfiles from the four satellites should be in the **$CERESHOME/ggeo/data/int_prod** directory.

10.4.1 Automated Procedures

The **run_month_ggeopost.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 10.4.2 through 10.4.6. The operator can use this script and by-pass the remainder of the instructions in Section 10.4, or else he/she can skip this Section (10.4.2) and start with the procedures in Section 10.4.3.

The **run_month_ggeopost.csh** script takes five command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows:

1. 4-digit dataYear (***yyyy***)
2. 2-digit dataMonth (***mm***)
3. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]
4. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
5. runMode (***i*** or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively. Use **runMode=*x*** to set up the jobs but not run them.]

To execute the **run_month_ggeopost.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeopost.csh [*yyyy mm controlFlag cleanupFlag runMode*]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this.

If you complete the instructions above, the remainder of Section 10.4 can be skipped.

10.4.2 How to Generate the ASCII File

The Postprocessor PCF ASCII file generator requires three command line arguments:

1. 4-digit dataYear (***yyyy***)
2. 2-digit dataMonth (***mm***)
3. controlFlag (=1)
   [NOTE: This value is always =1 for this PGE, indicating 1st pass processing.]

To generate the Postprocessor ASCII File, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_input_ggeopost.csh *yyyy mm controlFlag***

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory:

CER11.2P1_PCFin_{$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

10.4.3 How to Generate the PCF File

The Postprocessor PCF generator uses the PCF ASCII file as input.

To generate the Postprocessor PCF, type the following at the command line prompt:

> **> cd $CERESHOME/ggeo/bin**
> **> gen_pcf_ggeopost.csh $CERESHOME/ggeo/rcf/*PCFinfo***

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 10.4.2.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory:

CER11.2P1_PCF_CERES_Composite_{$CC11}.{yyyy}{mm}

10.4.4 How to Execute the Postprocessor

To execute the Postprocessor, type the following at the command line prompt:

> **> cd $CERESHOME/ggeo/bin**
> **> run_ggeopost.csh $CERESHOME/ggeo/rcf/*PCFile***

where ***PCFile*** is the name of the Postprocessor PCF generated in Section 10.4.3.

10.4.5 Special Case Considerations

N/A at this time.

10.4.6 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **> cd $CERESHOME/ggeo/bin**
> **> clean_ggeopost.csh *yyyy mm controlFlag***

where *yyyy*, *mm*, and *controlFlag* are the same as the arguments to the script that generates the Postprocessor PCF ASCII file (see Section 10.4.2).

NOTE: The environment variables in Section 10.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

10.5 Execution Evaluation

10.5.1 Exit Codes

Table 10-6. Exit Codes for CER11.2P1

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal Exit	Check the Log files and take the appropriate action (see Appendix B)

10.5.2 Screen Messages (Use Table format for large number of messages)

None.

10.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/ggeo/data/runlogs directory**

1. **Report Log File:**

   CER11.2P1_LogReport_ {$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.2P1_LogStatus_ {$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.2P1_LogUser_ {$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

10.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib.

Type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

10.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

If the .met file is not produced, the subsystem failed.

b. Target PGE Termination

Target PGEs should not be run if the GGEO Postprocessor does not terminate successfully; i.e. if the .met file is not produced.

10.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution generates one GGEO file and 256 gif files for each plot parameter on the GGEO. Currently, there are 9 plot parameters on the GGEO (i.e. 9 x 256 gif files are created).

Table 10-7. Expected Output File Listing for CER11.2P1 (1 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GGEOp_{SS11}_{PS11}_{CC11}.{yyyy}{mm} (.met) @($CERESHOME/ggeo/data/out_comp/data)	m	1933	1	CER7.1.1P1 CER10.1P1	Archive
CER_OQCPPp_{SS11}_{PS11}_{CC11}.{yyyy}{mm} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCPPWp_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.2P1_PCFin_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm

Table 10-7. Expected Output File Listing for CER11.2P1 (2 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER11.2P1_PCF_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.2P1_LogReport_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.2P1_LogStatus_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.2P1_LogUser_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

10.7 Expected Temporary Files/Directories

Table 10-8. Temporary Files Listing (1 of 2)

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/int_prod	VIS.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	VISNUM.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	VISSD.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IR.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IRNUM.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IRSD.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	AZMTH.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	SATZEN.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	SOLZEN.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	CLDPRCNT.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	CLDTEMP.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	OPTDPTH.{yyyy}{mm}
$CERESHOME/ggeo/data/scr	{yyyy}{mm}

Table 10-8. Temporary Files Listing (2 of 2)

Directory	File Name
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VIS_01.ppm ... VIS_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VISNUM_01.ppm ... VISNUM_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VISSD_01.ppm ... VISSD_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IR_01.ppm ... IR_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IRNUM_01.ppm ... IRNUM_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IRSD_01.ppm ... IRSD_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	AZMTH_01.ppm ... AZMTH_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	SOLZEN_01.ppm ... SOLZEN_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	SATZEN_01.ppm ... SATZEN_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	CLDPRCNT_01.ppm ... CLDPRCNT_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	CLDTEMP_01.ppm ... CLDTEMP_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	OPTDPTH_01.ppm ... OPTDPTH_256.ppm

NOTE: These files are automatically deleted at the end of processing. However, if there is an uncontrolled exit from processing, then they may have to be removed manually.

11.0 PGEName: CER11.2P2

Sort and Merge Gridded Geostationary Narrowband Radiances (2nd pass)

This PGE merges data from the Main Processor output files.

11.1 PGE Details

11.1.1 Responsible Persons

Table 11-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

11.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 11-1.

11.1.3 Parent PGE(s)

Table 11-2. Parent PGEs for CER11.2P2

PGEName	Description
CER11.1P5- CER11.1P8	Grid Geostationary Narrowband Radiances, 2nd pass

11.1.4 Target PGE(s)

Table 11-3. Target PGEs after CER11.2P2

PGEName	Description
CER11.4P1	Create Correlation Plots of GGEO vs. CERES Cloud Data
CER7.1.1P1	Process Time Interpolation and Synoptic Flux Computation
CER10.1P1	Monthly Regional TOA and Surface Radiation Budget

11.2 Operating Environment

11.2.1 Automated Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up jobs for an entire satellite month using the automated procedures (see Section 11.4.1).

Table 11-4. Automated Runtime Parameters for CER11.2P2

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2
cleanupFlag	Answer "y" to do file cleanup prior to job setup.	character	y, n
runMode	Answer "b" to run as batch-job(s) Answer "i" to run job(s) interactively in set-up window. Answer "x" to set up but not run job(s).	character	b, i, x

11.2.2 Runtime Parameter (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up individual jobs for a satellite month without the automated procedures (see Section 11.4.2).

Table 11-5. Runtime Parameters for CER11.2P2

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12
controlFlag	Flag indicating first or second pass processing.	int	2

11.2.3 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A LaTIS startup script with the following environment variable definitions should be sourced prior to GGEO job setup. The names of the geostationary satellites will be supplied by the Data Management Office (DMO).

SS11_1P1 **Sampling Strategy, PGEs CER11.1P1 and CER11.1P5 (GOES-East)**
SS11_1P2 **Sampling Strategy, PGEs CER11.1P2 and CER11.1P6 (GOES-West)**
SS11_1P3 **Sampling Strategy, PGEs CER11.1P3 and CER11.1P7 (METEOSAT)**
SS11_1P4 **Sampling Strategy, PGEs CER11.1P4 and CER11.1P8 (GMS)**
SS11 **Sampling Strategy, Subsystem 11 Postprocessor**
PS11_M **Production Strategy, Subsystem 11 Main Processors**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**
SW11 **Software SCCR#, Subsystem 11**
DATA11 **Data SCCR#, Subsystem 11**

11.2.4 Execution Frequency (daily, hourly, ..)

The Subsystem 11 Post Processor is a monthly processor. It can be executed with any number of granfiles produced from the parent PGEs (CER11.1P1 - CER11.1P4). The default case is to run with granfiles from all four satellites. This run takes about 2 hours.

11.2.5 Memory/Disk Space/Time Requirements

Memory: **1.7 GB**
Disk Space: **1.4 GB**
Total Run Time: **5.1 hrs**

11.2.6 Restrictions Imposed in Processing Order

N/A.

11.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

11.3.1 Input Dataset Name (#1): GGEO granfile

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):
(The number of input granfiles is dependent on the number of Main Processor jobs run for the data month.)

$CERESHOME/ggeo/data/int_prod
CER_GRAN_{$SS11_1Px}_{$PS11_M}_{$CC11}.{yyyy}{mm}{dd}
where
x = 1, 2, 3, or 4
yyyy = 4-digit year
mm = 2-digit month
dd = 2-digit startDay

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **The granfiles must be within the year/month defined by the Runtime Parameters dataYear and dataMonth**
3. Waiting Period: **Process when all granfiles are available and process is requested**

b. Source of Information (Source is PGE name or Ingest Source):

CER11.1P5 - CER11.1P8

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **178 MB/satellite/month**

11.4 Operating Procedures (Procedure for each part of the processor's elements)

This PGE can be processed with any number of granfiles. All the available granfiles from the four satellites should be in the **$CERESHOME/ggeo/data/int_prod** directory.

11.4.1 Automated Procedures

The **run_month_ggeopost.csh** script in the **$CERESHOME/ggeo/bin** directory automates the procedures outlined in Sections 11.4.2 through 11.4.6. The operator can use this script and by-pass the remainder of the instructions in Section 11.4, or else he/she can skip this Section (11.4.2) and start with the procedures in Section 11.4.3.

The **run_month_ggeopost.csh** script takes five command-line arguments. If these arguments are not supplied, the script will prompt for the information. The command line arguments are as follows:

1. 4-digit dataYear (***yyyy***)
2. 2-digit dataMonth (***mm***)
3. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]
4. cleanupFlag (***y*** or ***n***)
   [NOTE: If (**cleanupFlag==*y***), then file cleanup, of files from previous jobs with the same runtime parameters, is performed prior to job execution.]
5. runMode (***i*** or ***x***)
   [NOTE: Use **runMode=*i*** to run the job(s) interactively. Use **runMode=*x*** to set up the jobs but not run them.]

To execute the **run_month_ggeopost.csh** script, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_month_ggeopost.csh [*yyyy mm controlFlag cleanupFlag runMode*]**

The script will prompt for the command line arguments, if they are not included.

If (**runMode==*x***), then the operator will have to execute the job(s) from the command line to process the month. After the job set-up, the script will echo instructions to the screen for doing this.

If you complete the instructions above, the remainder of Section 11.4 can be skipped.

11.4.2 How to Generate the ASCII File

The Postprocessor PCF ASCII file generator requires two command line arguments:

1. 4-digit dataYear (***yyyy***)
2. 2-digit dataMonth (***mm***)
3. controlFlag (=2)
   [NOTE: This value is always =2 for this PGE, indicating 2nd pass processing.]

To generate the Postprocessor ASCII File, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_input_ggeopost.csh *yyyy mm controlFlag***

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory:

CER11.2P2_PCFin_{$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

11.4.3 How to Generate the PCF File

The Postprocessor PCF generator uses the PCF ASCII file as input.

To generate the Postprocessor PCF, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **gen_pcf_ggeopost.csh $CERESHOME/ggeo/rcf/*PCFinfo***

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 11.4.2

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory:

CER11.2P2_PCF_CERES_Composite_{$CC11}.{yyyy}{mm}

11.4.4 How to Execute the Postprocessor

To execute the Postprocessor, type the following at the command line prompt:

> **cd $CERESHOME/ggeo/bin**
> **run_ggeopost.csh $CERESHOME/ggeo/rcf/*PCFile***

where ***PCFile*** is the name of the Postprocessor PCF generated in Section 11.4.3.

11.4.5 Special Case Considerations

N/A at this time.

11.4.6 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> cd $CERESHOME/ggeo/bin
> clean_ggeopost.csh *yyyy mm controlFlag*

where *yyyy*, *mm,* and *controlFlag* are the same as the arguments to the script that generates the Postprocessor PCF ASCII file (see Section 11.4.2).

NOTE: The environment variables in Section 11.2.3 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

11.5 Execution Evaluation

11.5.1 Exit Codes

Table 11-6. Exit Codes for CER11.2P2

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal Exit	Check the Log files and take the appropriate action (see Appendix B)

11.5.2 Screen Messages (Use Table format for large number of messages)

None.

11.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/ggeo/data/runlogs directory**

1. **Report Log File:**

   CER11.2P2_LogReport_ {$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.2P2_LogStatus_ {$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate

a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.2P2_LogUser_ {$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

11.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib.

Type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

11.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

   If the .met file is not produced, the subsystem failed.

b. Target PGE Termination

   Target PGEs should not be run if the GGEO Postprocessor does not terminate successfully; i.e. if the .met file is not produced.

11.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution generates one GGEO file and 256 gif files for each plot parameter on the GGEO. Currently, there are 9 plot parameters on the GGEO (i.e. 9 x 256 gif files are created).

Table 11-7. Expected Output File Listing for CER11.2P2 (1 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)[c]	Freq/ PGE	Target PGE	Destination[d]
CER_GGEO_{SS11}_{PS11}_{CC11}.{yyyy}{mm} (.met) @($CERESHOME/ggeo/data/out_comp/data)	m	1933	1	CER7.1.1P1 CER10.1P1	Archive
CER_OQCPP_{SS11}_{PS11}_{CC11}.{yyyy}{mm} (.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	1	1	n/a	Archive, rm
CER_OQCPPW_{SS11}_{PS11}_{CC11}.{yyyy}{mm} (.met) @($CERESHOME/ggeo/web/qa_reports)	m	1	1	n/a	/QA, permanent
CER11.2P2_PCFin_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.2P2_PCF_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.2P2_LogReport_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.2P2_LogStatus_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.2P2_LogUser_{SS11}_{PS11}_{CC11}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
VIS_01.gif ... VIS_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
VISNUM_01.gif ... VISNUM_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
VISSD_01.gif ... VISSD_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
IR_01.gif ... IR_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
IRNUM_01.gif ... IRNUM_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
IRSD_01.gif ... IRSD_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
AZMTH_01.gif ... AZMTH_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
SOLZEN_01.gif ... SOLZEN_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
SATZEN_01.gif ... SATZEN_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
CLDPRCNT_01.gif ... CLDPRCNT_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent

Table 11-7. Expected Output File Listing for CER11.2P2 (2 of 2)

File Name[a]/Directory	m/o[b]	File Size (MB)[c]	Freq/ PGE	Target PGE	Destination[d]
CLDTEMP_01.gif ... CLDTEMP_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent
OPTDPTH_01.gif ... OPTDPTH_256.gif @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	2.5*	256	n/a	/QA, permanent

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. * - 2.5MB for 256 files
d. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

11.7 Expected Temporary Files/Directories

Table 11-8. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/int_prod	VIS.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	VISNUM.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	VISSD.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IR.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IRNUM.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IRSD.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	AZMTH.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	SATZEN.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	SOLZEN.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	CLDPRCNT.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	CLDTEMP.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	OPTDPTH.{yyyy}{mm}
$CERESHOME/ggeo/data/scr	{yyyy}{mm}
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VIS_01.ppm ... VIS_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VISNUM_01.ppm ... VISNUM_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VISSD_01.ppm ... VISSD_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IR_01.ppm ... IR_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IRNUM_01.ppm ... IRNUM_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IRSD_01.ppm ... IRSD_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	AZMTH_01.ppm ... AZMTH_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	SOLZEN_01.ppm ... SOLZEN_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	SATZEN_01.ppm ... SATZEN_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	CLDPRCNT_01.ppm ... CLDPRCNT_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	CLDTEMP_01.ppm ... CLDTEMP_256.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	OPTDPTH_01.ppm ... OPTDPTH_256.ppm

NOTE: These files are automatically deleted at the end of processing. However, if there is an uncontrolled exit from processing, then they may have to be removed manually.

12.0 PGEName: CER11.3P1

Recalibrate GGEO Input Radiance Data

This PGE creates coefficients for recalibrating the GEO input data by normalizing data from each satellite to CERES data on the SFC product.

12.1 PGE Details

12.1.1 Responsible Persons

Table 12-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

12.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 12-1.

12.1.3 Parent PGE(s)

Table 12-2. Parent PGEs for CER11.3P1

PGEName	Description
CER11.2P1	Sort and Merge Gridded Geostationary Narrowband Radiances, 1st pass
CER9.3P1	Sort and Merge Gridded TOA and Surface Fluxes

12.1.4 Target PGE(s)

Table 12-3. Target PGEs after CER11.3P1

PGEName	Description
CER11.1P5 - P8	Grid Geostationary Narrowband Radiances, 2nd pass

12.2 Operating Environment

12.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up a job.

Table 12-4. Runtime Parameters for CER11.3P1

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12

12.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A Langley TRMM Information System (LaTIS) start-up script with the following environment variable definitions should be sourced prior to GGEO job setup.

SS11_3 **Sampling Strategy, PGE CER11.3P1**
PS11_3 **Production Strategy, PGE CER11.3P1**
CC11_3 **Configuration Code, PGE CER11.3P1**
SW11_3 **Software SCCR#, PGE CER11.3P1**
DATA11_3 **Data SCCR#, PGE CER11.3P1**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**
SW11 **Software SCCR#, Subsystem 11**
DATA11 **Data SCCR#, Subsystem 11**
SS9 **Sampling Strategy, Subsystem 9**
PS9 **Production Strategy, Subsystem 9**
CC9 **Configuration Code, Subsystem 9**

12.2.3 Execution Frequency (daily, hourly, ..)

Once per month.

12.2.4 Memory/Disk Space/Time Requirements

Memory:	**32 MB**
Disk Space:	**4270 GB**
Total Run Time:	**1.7 hrs**

12.2.5 Restrictions Imposed in Processing Order

Not applicable.

12.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

12.3.1 Input Dataset Name (#1): GGEO (1st pass)

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/ggeo/data/out_comp/data
CER_GGEOp_{$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Data year and month must agree.**
3. Waiting Period: **Process when inputs are available.**

b. Source of Information (Source is PGE name or Ingest Source):

CER11.2P1

c. Alternate Data Set, if one exists (maximum waiting period): Not Applicable (**N/A)**

d. File Disposition after successful execution: **Keep.**

e. Typical file size (MB): **1933**

12.3.2 Input Dataset Name (#2): SFC binary file

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/tisa_grid/data/out_comp/data/SFC
CER_SFCB_{$SS9}_{$PS9}_{$CC9}.{yyyy}{mm}Z

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Data year and month must agree.**
3. Waiting Period: **Process when inputs are available.**

b. Source of Information (Source PGE name or Ingest Source):

CER9.3P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Keep.**

e. Typical file size (MB): **50 MB/hour**

12.4 Operating Procedures (Procedure for each part of the processor's elements)

12.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

12.4.2 How to Generate the ASCII File

The ASCII file generator script requires two command line arguments: (see Table 12-4)

1. 4-digit dataYear (***yyyy***)
2. 2-digit dataMonth (***mm***)

To generate the ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_nb_intercalib.csh *yyyy mm*

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.3P1_PCFin_{$SS11_3}_{$PS11_3}_{$CC11_3}.{yyyy}{mm}

12.4.3 How to Generate the PCF File

The PCF generator script uses the PCF ASCII file name as input. To generate the PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_nb_intercalib.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 12.4.2.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.3P1_PCF_{$SS11_3}_{$PS11_3}_{$CC11_3}.{yyyy}{mm}

12.4.4 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_nb_intercalib.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 12.4.3.

12.4.5 Special Case Considerations

N/A at this time.

12.4.6 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> cd $CERESHOME/ggeo/bin
> clean_nb_intercalib.csh *yyyy mm*

where ***yyyy*** and ***mm*** are the same as the arguments to the script that generates the PCF ASCII file (see Section 12.4.2).

NOTE: The environment variables in Section 12.2.2 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

12.5 Execution Evaluation

12.5.1 Exit Code

CER11.3P1 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 12-5.

Table 12-5. Exit Codes for CER11.3P1

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

12.5.2 Screen Messages (Use Table format for large number of messages)

None.

12.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.3P1_LogReport_{$SS11_3}_{$PS11_3}_{$CC11_3}.{yyyy}{mm}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.3P1_LogStatus_{$SS11_3}_{$PS11_3}_{$CC11_3}.{yyyy}{mm}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.3P1_LogUser_{$SS11_3}_{$PS11_3}_{$CC11_3}.{yyyy}{mm}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

12.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

12.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGEs, CER11.1P5-8 cannot process if this PGE does not successfully complete.

12.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 12-6. Expected Output File Listing for CER11.3P1 (1 of 2)

File Name/Directory[a]	m/o[b]	File Size (MB)	Freq/ PGE	Target PGEs	Destination[c]
cal_coeffs.{geosatName}.nml[d] @($CERESHOME/ggeo/data/ancillary/dynamic)	m	0.001	1-5[e]	CER11.1P5 CER11.1P6 CER11.1P7 CER11.1P8	permanent
CER_intercalib_{yyyy}{mm}.ps @($CERESHOME/ggeo/web/ps)	m	3.1	1	n/a	permanent
CER11.3P1_PCFin_{SS11_3}_{PS11_3}_{CC11_3} .{yyyy}{mm}@($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.3P1_PCF_{SS11_3}_{PS11_3}_{CC11_3} .{yyyy}{mm}@($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm

Table 12-6. Expected Output File Listing for CER11.3P1 (2 of 2)

File Name/Directory[a]	m/o[b]	File Size (MB)	Freq/ PGE	Target PGEs	Destination[c]
CER11.3P1_LogReport_{SS11_3}_{PS11_3}_{CC11_3} .{yyyy}{mm}@($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.3P1_LogStatus_{SS11_3}_{PS11_3}_{CC11_3} .{yyyy}{mm}@($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.3P1_LogUser_{SS11_3}_{PS11_3}_{CC11_3} .{yyyy}{mm}@($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove
d. If these files exist prior to running the PGE, then they get appended rather than created.
e. The number of files depends on the number of GEO input sources which contributed data to the input GGEOp file.

12.7 Expected Temporary Files/Directories

Table 12-7. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/out_comp/coeffs	cal_coeffs.{geosatName}.{yyyy}{mm}.nml
$CERESHOME/ggeo/web/ps/scr	CER_{geosatName}_land_ir.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_{geosatName}_land_vis.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_{geosatName}_ocean_ir.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_{geosatName}_ocean_vis.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_{geosatName}_desert_ir.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_{geosatName}_desert_vis.{yyyy}{mm}

13.0 PGEName: CER11.4P1

Create Correlation Plots of GGEO vs. CERES Cloud Data

This PGE creates correlation plots of GEO cloud data vs. CERES cloud data from the SFC file.

13.1 PGE Details

13.1.1 Responsible Persons

Table 13-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

13.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 13-1.

13.1.3 Parent PGE(s)

Table 13-2. Parent PGEs for CER11.4P1

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass
CER9.3P1	Sort and Merge Gridded TOA and Surface Fluxes

13.1.4 Target PGE(s)

Not applicable.

13.2 Operating Environment

13.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up a job.

Table 13-3. Runtime Parameters for CER11.4P1

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12

13.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A Langley TRMM Information System (LaTIS) start-up script with the following environment variable definitions should be sourced prior to GGEO job setup.

SS11_4 **Sampling Strategy, PGE CER11.4P1**
PS11_4 **Production Strategy, PGE CER11.4P1**
CC11_4 **Configuration Code, PGE CER11.4P1**
SW11_4 **Software SCCR#, PGE CER11.4P1**
DATA11_4 **Data SCCR#, PGE CER11.4P1**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**
SW11 **Software SCCR#, Subsystem 11**
DATA11 **Data SCCR#, Subsystem 11**
SS9 **Sampling Strategy, Subsystem 9**
PS9 **Production Strategy, Subsystem 9**
CC9 **Configuration Code, Subsystem 9**

13.2.3 Execution Frequency (daily, hourly, ..)

Once per month.

13.2.4 Memory/Disk Space/Time Requirements

Memory: **32 MB**
Disk Space: **4270 GB**
Total Run Time: **1.7 hrs**

13.2.5 Restrictions Imposed in Processing Order

Not applicable.

13.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

13.3.1 Input Dataset Name (#1): GGEO (2nd pass)

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/ggeo/data/out_comp/data
CER_GGEO_{$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Data year and month must agree.**
3. Waiting Period: **Process when inputs are available.**

b. Source of Information (Source is PGE name or Ingest Source):

CER11.2P1

c. Alternate Data Set, if one exists (maximum waiting period): Not Applicable (**N/A)**

d. File Disposition after successful execution: **Keep.**

e. Typical file size (MB): **1933**

13.3.2 Input Dataset Name (#2): SFC binary file

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/tisa_grid/data/out_comp/data/SFC
CER_SFCB_{$SS9}_{$PS9}_{$CC9}.{yyyy}{mm}Z

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Data year and month must agree.**
3. Waiting Period: **Process when inputs are available.**

b. Source of Information (Source PGE name or Ingest Source):

CER9.3P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Keep.**

e. Typical file size (MB): **50 MB/hour**

13.4 Operating Procedures (Procedure for each part of the processor's elements)

13.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

13.4.2 How to Generate the ASCII File

The ASCII file generator script requires two command line arguments: (see Table 13-3)

1. 4-digit dataYear (*yyyy*)
2. 2-digit dataMonth (***mm***)

To generate the ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_nb_cloudplot.csh *yyyy mm*

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.4P1_PCFin_{$SS11_4}_{$PS11_4}_{$CC11_4}.{yyyy}{mm}

13.4.3 How to Generate the PCF File

The PCF generator script uses the PCF ASCII file name as input. To generate the PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_nb_cloudplot.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 13.4.2.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.4P1_PCF_{$SS11_4}_{$PS11_4}_{$CC11_4}.{yyyy}{mm}

13.4.4 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_nb_cloudplot.csh $CERESHOME/ggeo/rcf/*PCFile*

where ***PCFile*** is the name of the Main Processor PCF generated in Section 13.4.3.

13.4.5 Special Case Considerations

N/A at this time.

13.4.6 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> **> cd $CERESHOME/ggeo/bin**
> **> clean_nb_cloudplot.csh *yyyy mm***

where ***yyyy*** and ***mm*** are the same as the arguments to the script that generates the PCF ASCII file (see Section 13.4.2).

NOTE: The environment variables in Section 13.2.2 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

13.5 Execution Evaluation

13.5.1 Exit Code

CER11.4P1 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 13-4.

Table 13-4. Exit Codes for CER11.4P1

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

13.5.2 Screen Messages (Use Table format for large number of messages)

None.

13.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.4P1_LogReport_{$SS11_4}_{$PS11_4}_{$CC11_4}.{yyyy}{mm}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.4P1_LogStatus_{$SS11_4}_{$PS11_4}_{$CC11_4}.{yyyy}{mm}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.4P1_LogUser_{$SS11_4}_{$PS11_4}_{$CC11_4}.{yyyy}{mm}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

13.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

13.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All Main Processor jobs run independently of each other. The terminal failure of one job does not adversely affect the processing of other jobs.

b. Target PGE Termination

The target PGEs, CER11.1P5-8 cannot process if this PGE does not successfully complete.

13.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 13-5. Expected Output File Listing for CER11.4P1

File Name/Directory[a]	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_cloudplot_(SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm}.ps @($CERESHOME/ggeo/web/ps)	m	28	1	n/a	permanent
CER_cloudplot_(SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm}.stats @($CERESHOME/ggeo/web/ps)	m	0.01	1	n/a	permanent
CER_QCRPT_(SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm}(.met) @($CERESHOME/ggeo/data/out_comp/qa_reports)	m	0.3	1	n/a	Archive, rm
CER_QCRPTW_(SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm} @($CERESHOME/ggeo/web/qa_reports)	m	0.3	1	n/a	/QA, permanent
CER11.4P1_PCFin_{SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.4P1_PCF_{SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.4P1_LogReport_{SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.4P1_LogStatus_{SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.4P1_LogUser_{SS11_4}_{PS11_4}_{CC11_4}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove

13.7 Expected Temporary Files/Directories

Table 13-6. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/web/ps/scr	CER_CERES_{geosatName}_ZONAVG_cldamt.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_CERES_{geosatName}_ZONAVG_temp.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_CERES_{geosatName}_ZONAVG_optdepth.{yyyy}{mm}
$CERESHOME/ggeo/web/ps/scr	CER_CERES_{geosatName}_REGAVG.{yyyy}{mm}

14.0 PGEName: CER11.6P1

GGEO Weeder

This PGE removes (or "weeds") bad data from the GGEO output product.

14.1 PGE Details

14.1.1 Responsible Persons

Table 14-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Joe Stassi	Rajalekshmy Raju
Organization	SAIC	SAIC
Address	One Enterprise Parkway	One Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 827-4887	(757) 827-4854
Fax	(757) 825-4968	(757) 825-4968
LaRC email	j.c.stassi@larc.nasa.gov	r.raju@larc.nasa.gov

14.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 14-1.

14.1.3 Parent PGE(s)

Table 14-2. Parent PGEs for CER11.6P1

PGEName	Description
CER11.2P2	Sort and Merge Gridded Geostationary Narrowband Radiances, 2nd pass

14.1.4 Target PGE(s)

Table 14-3. Target PGEs after CER11.6P1

PGEName	Description
CER11.4P1	Create Correlation Plots of GGEO vs. CERES Cloud Data
CER7.1.1P1	Process Time Interpolation and Synoptic Flux Computation
CER10.1P1	Monthly Regional TOA and Surface Radiation Budget

14.2 Operating Environment

14.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

The following runtime parameters are used when setting up a job.

Table 14-4. Runtime Parameters for CER11.6P1

Parameter	Description	Data Type	Valid Values
dataYear (yyyy)	Data year	4-digit	valid year number
dataMonth (mm)	Data month	2-digit	01-12

14.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

There is no subsystem-specific environment script that needs executing for the GGEO Subsystem. A Langley TRMM Information System (LaTIS) start-up script with the following environment variable definitions should be sourced prior to GGEO job setup.

SS11_6 **Sampling Strategy, PGE CER11.6P1**
PS11_6 **Production Strategy, PGE CER11.6P1**
CC11_6 **Configuration Code, PGE CER11.6P1**
SW11_6 **Software SCCR#, PGE CER11.6P1**
DATA11_6 **Data SCCR#, PGE CER11.6P1**
SS11 **Sampling Strategy, Subsystem 11 Postprocessor**
PS11 **Production Strategy, Subsystem 11 Postprocessor**
CC11 **Configuration Code, Subsystem 11**
SW11 **Software SCCR#, Subsystem 11**
DATA11 **Data SCCR#, Subsystem 11**

14.2.3 Execution Frequency (daily, hourly, ..)

This PGE is not run routinely but only "on demand."

14.2.4 Memory/Disk Space/Time Requirements

Memory:	**9 MB**
Disk Space:	**3900 GB**
Total Run Time:	**20 minutes**

14.2.5 Restrictions Imposed in Processing Order

Not applicable.

14.3 Processor Dependencies (Previous PGEs, Ingest Data, ..)

Note: Include required .met files, header files, .. all required inputs

14.3.1 Input Dataset Name (#1): GGEO (2nd pass)

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/ggeo/data/out_comp/data
CER_GGEO_{$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Data year and month must agree.**
3. Waiting Period: **Since this PGE weeds bad data from the GGEO file, it will never be initiated unless the GGEO file is first available.**

b. Source of Information (Source is PGE name or Ingest Source):

CER11.2P2

c. Alternate Data Set, if one exists (maximum waiting period): Not Applicable (**N/A)**

d. File Disposition after successful execution: **Remove.**

e. Typical file size (MB): **1933**

14.3.2 Input Dataset Name (#2): Bad Record Information file

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/ggeo/data/ancillary/dynamic
badrec_info_{$SS11}_{$PS11}_{$CC11}.{yyyy}{mm}

1. Mandatory/Optional: **Mandatory.**
2. Time Related Dependency: **Data year and month must agree.**
3. Waiting Period: **Process when inputs are available.**

b. Source of Information (Source PGE name or Ingest Source):

This input is created offline and delta-delivered by the GGEO analyst into the production directory.

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Keep.**

e. Typical file size (MB): **< 1 MB**

14.4 Operating Procedures (Procedure for each part of the processor's elements)

14.4.1 Staging Input Files

All input files should be staged **PRIOR** to job setup.

14.4.2 How to Generate the ASCII File

The ASCII file generator script requires two command line arguments: (see Table 14-4)

1. 4-digit dataYear (***yyyy***)
2. 2-digit dataMonth (***mm***)

To generate the ASCII file, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_input_ggeoweeder.csh *yyyy mm*

This will create the following PCF ASCII file in the **$CERESHOME/ggeo/rcf** directory.

CER11.6P1_PCFin_{$SS11_6}_{$PS11_6}_{$CC11_6}.{yyyy}{mm}

14.4.3 How to Generate the PCF File

The PCF generator script uses the PCF ASCII file name as input. To generate the PCF, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> gen_pcf_ggeoweeder.csh $CERESHOME/ggeo/rcf/*PCFinfo*

where ***PCFinfo*** is the name of the PCF ASCII file generated in Section 14.4.2.

This will create the following PCF in the **$CERESHOME/ggeo/rcf** directory.

CER11.6P1_PCF_{$SS11_6}_{$PS11_6}_{$CC11_6}.{yyyy}{mm}

14.4.4 How to Execute the Main Processor

To execute the Main Processor, type the following at the command line prompt:

> cd $CERESHOME/ggeo/bin
> run_ggeoweeder.csh $CERESHOME/ggeo/rcf/*PCFile*
where ***PCFile*** is the name of the Main Processor PCF generated in Section 14.4.3.

14.4.5 Special Case Considerations

N/A at this time.

14.4.6 Special Reprocessing Instructions

Once a job has started processing, the same job cannot be reprocessed without first removing the log and output files created during the previous run. This is true regardless of whether the previous run completed successfully or not. File removal can be accomplished with the cleanup script by typing the following at the command line prompt.

> cd $CERESHOME/ggeo/bin
> clean_ggeoweeder.csh *yyyy mm*

where ***yyyy*** and ***mm*** are the same as the arguments to the script that generates the PCF ASCII file (see Section 14.4.2).

NOTE: The environment variables in Section 14.2.2 must be the same as they were for the Main Processor job, the one being cleaned, when it was setup.

14.5 Execution Evaluation

14.5.1 Exit Code

CER11.6P1 terminates using the CERESlib defined EXIT code for LaTIS as seen in Table 14-5.

Table 14-5. Exit Codes for CER11.6P1

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
202	Abnormal	Check the Logfiles and take the appropriate action (see Appendix B)

14.5.2 Screen Messages (Use Table format for large number of messages)

None.

14.5.3 Log and Status Files Results (Include ALL Log Files)

The log files contain all error and/or status messages produced by the PGE. The files are located in **$CERESHOME/ggeo/data/runlogs** directory.

1. **Report Log File:**

   CER11.6P1_LogReport_{$SS11_6}_{$PS11_6}_{$CC11_6}.{yyyy}{mm}

   The Report Log File contains process-related informational messages. These messages may be strictly informative, or they may indicate a fatal condition that resulted in premature PGE termination. A list of messages is contained in Appendix B.

2. **Status Log File:**

   CER11.6P1_LogStatus_{$SS11_6}_{$PS11_6}_{$CC11_6}.{yyyy}{mm}

   The Status Log File contains all Toolkit messages with levels {_W_, _E_, _F_, _S_, _M_, _U_, _N_, and _S_}. These messages could be strictly informative, or they could indicate a fatal condition that resulted in premature PGE termination. The messages are self-explanatory.

3. **User Log File:**

   CER11.6P1_LogUser_{$SS11_6}_{$PS11_6}_{$CC11_6}.{yyyy}{mm}

   The User Log File contains only those messages created by the Toolkit with levels _U_ (user information) and _N_ (notice). These messages are strictly informative.

14.5.4 Solutions to Possible Problems

A lot of problems are due to errors in the PCF file. Checking the PCF for syntax errors should be the first step when problems occur. This can be done with the **ceresutil** script in CERESlib. To check the PCF for errors, type the following at the command line prompt:

> cd $CERESHOME/ggeo/rcf
> $CERESLIB/bin/ceresutil
- Enter 2 to check PCF file correctness
- Type the PCF name

Also, verify that the input files listed in the PCF are present in the input data directory.

14.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None. All jobs are run independently of other jobs.

b. Target PGE Termination

If this PGE is initiated and does not complete successfully, then the target PGEs can run using the GGEO output rather than the GGEOW weeded output. However, this should only be done after first consulting with the GGEO analyst.

14.6 Expected Output Dataset(s)

The Expected Output Datasets are listed below. Each PGE execution produces one granfile and one QC report.

Table 14-6. Expected Output File Listing for CER11.6P1 (1 of 2)

File Name/Directory[a]	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER_GGEOW_(SS11_6}_{PS11_6}_{CC11_6}.{yyyy}{mm} (.met) @($CERESHOME/ggeo/data/out_comp/data)	m	1933	1	CER 11.4P1 CER7.1.1P1 CER10.1P1	Archive
CER11.6P1_PCFin_{SS11_6}_{PS11_6}_{CC11_6}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.6P1_PCF_{SS11_6}_{PS11_6}_{CC11_6}.{yyyy}{mm} @($CERESHOME/ggeo/rcf)	m	1	1	n/a	Archive, rm
CER11.6P1_LogReport_{SS11_6}_{PS11_6}_{CC11_6}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm

Table 14-6. Expected Output File Listing for CER11.6P1 (2 of 2)

File Name/Directory[a]	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]
CER11.6P1_LogStatus_{SS11_6}_{PS11_6}_{CC11_6}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
CER11.6P1_LogUser_{SS11_6}_{PS11_6}_{CC11_6}.{yyyy}{mm} @($CERESHOME/ggeo/data/runlogs)	m	1	1	n/a	Archive, rm
VIS_01.gif ... VIS_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
VISNUM_01.gif ... VISNUM_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
VISSD_01.gif ... VISSD_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
IR_01.gif ... IR_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
IRNUM_01.gif ... IRNUM_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
IRSD_01.gif ... IRSD_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
AZMTH_01.gif ... AZMTH_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
SOLZEN_01.gif ... SOLZEN_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
SATZEN_01.gif ... SATZEN_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
CLDPRCNT_01.gif ... CLDPRCNT_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
CLDTEMP_01.gif ... CLDTEMP_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent
OPTDPTH_01.gif ... OPTDPTH_256.gif [d] @($CERESHOME/ggeo/web/plot/gif/GGEO_{yyyy}{mm})	m	0.03	1 - 20	n/a	/QA, permanent

a. If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.
b. m - mandatory output
o - optional output
c. /QA - File is to be written to the DAAC designated /QA directory.
rm - remove
d. Only a small subset of these files will be created during any one job.

14.7 Expected Temporary Files/Directories

Table 14-7. Temporary Files Listing

Directory	File Name
$CERESHOME/ggeo/data/runlogs	ShmMem
$CERESHOME/ggeo/data/int_prod	VIS.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	VISNUM.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	VISSD.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IR.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IRNUM.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	IRSD.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	AZMTH.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	SATZEN.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	SOLZEN.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	CLDPRCNT.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	CLDTEMP.{yyyy}{mm}
$CERESHOME/ggeo/data/int_prod	OPTDPTH.{yyyy}{mm}
$CERESHOME/ggeo/data/scr	{yyyy}{mm}
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VIS_nnn.ppm (nnn dependent on badrec info input)
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VISNUM_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	VISSD_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IR_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IRNUM_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	IRSD_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	AZMTH_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	SOLZEN_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	SATZEN_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	CLDPRCNT_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	CLDTEMP_nnn.ppm
$CERESHOME/ggeo/data/scr/{yyyy}{mm}	OPTDPTH_nnn.ppm

NOTE: These files are automatically deleted at the end of processing. However, if there is an uncontrolled exit from processing, then they may have to be removed manually.

References

1. Reference "Proposal for Semi-Automated Sampling Strategy, Production Strategy, and Configuration Code Implementation" internal paper for detail description of the CERES environment parameters. URL:http://asd-www.larc.nasa.gov/ceres/intern_doc/

Appendix A
Acronyms and Abbreviations

AES	Atmospheric Environmental Services
ASDC	Atmospheric Sciences Data Center
CERES	Clouds and the Earth's Radiant Energy System
CM	Configuration Management
DAAC	Distributed Active Archive Center
DMO	Data Management Office
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOS-PM	EOS Afternoon Crossing Mission
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
GGEO	Grid GEOstationary data subsystem (another name for Subsystem 11)
GMS	Geostationary Meteorological Satellite operated by JMA
GOES	Geostationary Operational Environmental Satellite
granfile	granule file; intermediate output file produced by the GGEO Main processor
ISCCP	International Satellite Cloud Climatology Project
JMA	Japan Meteorological Agency, Tokyo, Japan
LaTIS	Langley TRMM Information System
LW	Longwave
MB	Megabytes
MCF	Metadata Control File
met	metadata file
METEOSAT	METEOrological Operational SATellite
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
NOAA	National Oceanic and Atmospheric Administration
PGE	Product Generation Executables
QC	Quality Control
SAIC	Science Applications International Corporation
TRMM	Tropical Rainfall Measuring Mission

Appendix B
Error Messages for Subsystem 11

Appendix B contains a comprehensive list of messages that can be generated during the execution of a PGE. These messages are used to inform the operator or analyst of specific circumstances encountered during data processing. These messages may be strictly informative (Error Type = Status or Warning), or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). All messages are written to the LogReport file and/or the LogStatus File of the processing instance.

Table B-1 contains a list of the PGE CER11.1P1 - CER11.1P4 and CER11.2P1 diagnostic messages. Each table entry includes a pneumonic, the text associated with that pneumonic, and a set of Action Keys.

Operator Instructions:

If a PGE prematurely terminates, then take the following steps:

1. Look at the last few records on the LogStatus file.
2. Find the error message in the following Error Message listing(s), and follow the appropriate ACTION
3. If an error message is not in the LogStatus File, then repeat steps 1 and 2 using the LogReport File.
4. If no information is derived, then call the responsible person in Table 1-1.
5. If the appropriate ACTION failed, then call the responsible person in Table 1-1.
6. In all cases, log all steps that were taken after the PGE failure, and send a copy to the responsible person listed in Table 1-1.

Action Keys for Table B-1: (Note if an ACTION does not work, call the Responsible Person in Table 1-1.)

1. Verify that file exists.
2. Allocate more memory, rerun.
3. Check that PCF is correct, fix any errors, rerun.
4. No Action, call the Responsible Person in Table 1-1.

Table B-1. Example of TK (SMF) Utility Message Table (1 of 2)

Message/Error Type		Action Key
GGEOFILE_E_FILEOPENERR	Error...opening GGEO file	1
GGEOFILE_E_FILECLOSERR	Error...closing GGEO file	4
GGEOFILE_E_HEDREADERR	Error...reading ggeo header record	1,4
GGEOFILE_E_MEMALLOC_ERR	Error...allocating memory for zone array	2
BGRANULE_E_GETNUMIMAGES_ERROR	Error...unable to number of image files from PCF	3
BGRANULE_E_MEMALLOC_ERR	Error...unsuccessful allocation of memory.	2, 4
GGEOMAIN_E_IMAGEFILEREAD	Error...opening or reading image file	3
GGEOMAIN_E_GETRUNTIMEPARAM	Error...getting runtime parameter from PCF.	3
GRANFILE_E_CLOSERR	Error...closing ggeo granfile.	4
GRANFILE_E_GETNUMERR	Error...getting the number of ggeo granfiles from the PCF.	3
GRANFILE_E_HEADEREADERR	Error...reading header from ggeo granfile.	1
GRANFILE_E_OPENERR	Error...opening ggeo granfile	3
GRANFILE_E_SATELLITEMISMATCH	Error...PCF satellite name does not match input satellite id	3
GGEOPOST_E_DATEMISMATCH	Error...granfile year/month does not match input parameter	1, 3
GGEOPOST_E_INVALIDDATE	Error...invalid date info on granfile header	1
PCFILE_E_CANTFINDDIAGSFLAG	Error...cannot find diagnostics flag	3
PCFILE_E_CANTFINDINPUTID	Error...cannot find input_data_id in PCF.	3
PCFILE_E_CANTFINDPLOTHOURPARAM	Error...cannot find plot hour parameter in PCF.	3
PCFILE_E_CANTFINDPLOTPARAM	Error...cannot find plot parameter in PCF.	3
CFILE_E_CANTFINDRESTARTPARAM	Error...cannot find restart parameter in PCF.	3
PCFILE_E_CANTFINDSATNAME	Error...cannot find satellite name in PCF.	3
PCFILE_E_CANTFINDYYYYMM	Error...cannot find data date in PCF	3
PCFILE_E_CANTGETNUMGRANFILES	Error...unable to get number of granfiles from the PCF.	3
PCFILE_E_CANTGETNUMIMAGES	Error...unable to get number of image files from PCF	3

Table B-1. Example of TK (SMF) Utility Message Table (2 of 2)

Message/Error Type		Action Key
PCFILE_E_INCORRECTINPUTID	Error...unknown code for input_data_id.	4
PCFILE_E_PLOTFLAGERR	Error...undecipherable plot flag.	3, 4
PCFILE_E_WRONGNUMPLOTFLAGS	Error...incorrect number of plot flags.	4
ISCCPINPUT_E_IMGFILEOPENERR	Error...B1 Image file open error	1,3,4
ISCCPINPUT_E_MEMALLOCATERR	Error...allocating memory.	2
ISCCPINPUT_E_FILEMISMATCH	Error...image file date/time does not correspond to orbital file date/time.	1,3,4
MCNAVIGATE_E_MEMALLOCATERR	Error...allocating memory.	2

Appendix C
Sample ASCII (PCFin) File Listings for Subsystem 11

C.1 Sample ASCII (PCFin) File Listing for CER11.1P1

/CERES/ggeo/rcf/CER11.1P1_PCFin_GOES-8_ValidationR2_000000.19980101

```
############################
# CERES baseline Metadata #
############################

PGEName = CER11.1P1
SamplingStrategy = GOES-8
ProductionStrategy = ValidationR2
CERDataDateYear = 1998
CERDataDateMonth = 01
CERDataDateDay = 01
CERHrOfMonth =

ConfigurationCode = 000000
SWsccr = 048
DATAsccr = 000

###################################
# PGE specific runtime parameters
###################################

input_data_id = B1_GOESCN
satellite_name = GOES-8
diagnostics_flag  = 0

###################################
# PCF Directories
###################################

Input_File_Directory = /CERES/ggeo/data/input
Output_File_Directory = /CERES/ggeo/data/out_comp/data
Support_Input_Directory = /CERES/ggeo/data/ancillary
Support_Output_Directory = /CERES/ggeo/data/runlogs
Intermediate_Input_Directory = /CERES/ggeo/data/int_prod
Intermediate_Output_Directory = /CERES/ggeo/data/int_prod
Tempory_File_Directory = /CERES/ggeo/data/scr
```

```
###################################
# ggeo specific directories
###################################

MCF_Template_Directory = /CERES/ggeo/rcf
QC_File_Directory = /CERES/ggeo/data/out_comp/qa_reports

###################################
# input file names
###################################

image_file1 = B1199712310245
image_file2 = B1199712310545
image_file3 = B1199712310845
image_file4 = B1199712311145
image_file5 = B1199712311445
image_file6 = B1199712311745
image_file7 = B1199712312045
image_file8 = B1199712312345
image_file9 = B1199801010245
image_file10 = B1199801010545
image_file11 = B1199801010845
image_file12 = B1199801011145
image_file13 = B1199801011445
image_file14 = B1199801011745
image_file15 = B1199801012045
image_file16 = B1199801012345
image_file17 = B1199801020245
image_file18 = B1199801020545
image_file19 = B1199801020845
image_file20 = B1199801021145
image_file21 = B1199801021445
image_file22 = B1199801021745
image_file23 = B1199801022045
image_file24 = B1199801022345
image_file25 = B1199801030245
image_file26 = B1199801030545
image_file27 = B1199801030845
image_file28 = B1199801031145
image_file29 = B1199801031445
image_file30 = B1199801031745
image_file31 = B1199801032045
image_file32 = B1199801032345
image_file33 = B1199801040245
image_file34 = B1199801040545
image_file35 = B1199801040845
```

image_file36 = B1199801041145
image_file37 = B1199801041445
image_file38 = B1199801041745
image_file39 = B1199801042045
image_file40 = B1199801042345
image_file41 = B1199801050245
image_file42 = B1199801050545
image_file43 = B1199801050845
image_file44 = B1199801051145
image_file45 = B1199801051445
image_file46 = B1199801051745
image_file47 = B1199801052045
image_file48 = B1199801052345
image_file49 = B1199801060245
image_file50 = B1199801060545
image_file51 = B1199801060845
image_file52 = B1199801061145
image_file53 = B1199801061445
image_file54 = B1199801061745
image_file55 = B1199801062045
image_file56 = B1199801062345
header_file1 = OA199712310245
header_file2 = OA199712310545
header_file3 = OA199712310845
header_file4 = OA199712311145
header_file5 = OA199712311445
header_file6 = OA199712311745
header_file7 = OA199712312045
header_file8 = OA199712312345
header_file9 = OA199801010245
header_file10 = OA199801010545
header_file11 = OA199801010845
header_file12 = OA199801011145
header_file13 = OA199801011445
header_file14 = OA199801011745
header_file15 = OA199801012045
header_file16 = OA199801012345
header_file17 = OA199801020245
header_file18 = OA199801020545
header_file19 = OA199801020845
header_file20 = OA199801021145
header_file21 = OA199801021445
header_file22 = OA199801021745
header_file23 = OA199801022045
header_file24 = OA199801022345
header_file25 = OA199801030245

header_file26 = OA199801030545
header_file27 = OA199801030845
header_file28 = OA199801031145
header_file29 = OA199801031445
header_file30 = OA199801031745
header_file31 = OA199801032045
header_file32 = OA199801032345
header_file33 = OA199801040245
header_file34 = OA199801040545
header_file35 = OA199801040845
header_file36 = OA199801041145
header_file37 = OA199801041445
header_file38 = OA199801041745
header_file39 = OA199801042045
header_file40 = OA199801042345
header_file41 = OA199801050245
header_file42 = OA199801050545
header_file43 = OA199801050845
header_file44 = OA199801051145
header_file45 = OA199801051445
header_file46 = OA199801051745
header_file47 = OA199801052045
header_file48 = OA199801052345
header_file49 = OA199801060245
header_file50 = OA199801060545
header_file51 = OA199801060845
header_file52 = OA199801061145
header_file53 = OA199801061445
header_file54 = OA199801061745
header_file55 = OA199801062045
header_file56 = OA199801062345

C.2 Sample ASCII (PCFin) File Listing for CER11.1P2

/CERES/ggeo/rcf/CER11.1P2_PCFin_GOES-9_ValidationR2_000000.19980101

############################
CERES baseline Metadata
############################

PGEName = CER11.1P2
SamplingStrategy = GOES-9
ProductionStrategy = ValidationR2
CERDataDateYear = 1998
CERDataDateMonth = 01

```
CERDataDateDay = 01
CERHrOfMonth =

ConfigurationCode = 000000
SWsccr = 048
DATAsccr = 000

###################################
# PGE specific runtime parameters
###################################

input_data_id = B1_GOESMC
satellite_name = GOES-9
diagnostics_flag  = 0

###################################
# PCF Directories
###################################

Input_File_Directory = /CERES/ggeo/data/input
Output_File_Directory = /CERES/ggeo/data/out_comp/data
Support_Input_Directory = /CERES/ggeo/data/ancillary
Support_Output_Directory = /CERES/ggeo/data/runlogs
Intermediate_Input_Directory = /CERES/ggeo/data/int_prod
Intermediate_Output_Directory = /CERES/ggeo/data/int_prod
Tempory_File_Directory = /CERES/ggeo/data/scr

###################################
# ggeo specific directories
###################################

MCF_Template_Directory = /CERES/ggeo/rcf
QC_File_Directory = /CERES/ggeo/data/out_comp/qa_reports

###################################
# input file names
###################################

image_file1 = 97365000014i09.B1D
image_file2 = 97365030014i09.B1D
image_file3 = 97365060014i09.B1D
image_file4 = 97365090014i09.B1D
image_file5 = 97365120014i09.B1D
image_file6 = 97365150014i09.B1D
image_file7 = 97365180014i09.B1D
image_file8 = 97365210014i09.B1D
```

image_file9 = 98001000014i09.B1D
image_file10 = 98001030014i09.B1D
image_file11 = 98001060014i09.B1D
image_file12 = 98001090014i09.B1D
image_file13 = 98001120014i09.B1D
image_file14 = 98001150014i09.B1D
image_file15 = 98001180014i09.B1D
image_file16 = 98001210014i09.B1D
image_file17 = 98002000014i09.B1D
image_file18 = 98002030014i09.B1D
image_file19 = 98002060014i09.B1D
image_file20 = 98002090014i09.B1D
image_file21 = 98002120014i09.B1D
image_file22 = 98002150014i09.B1D
image_file23 = 98002180014i09.B1D
image_file24 = 98002210014i09.B1D
image_file25 = 98003000014i09.B1D
image_file26 = 98003030014i09.B1D
image_file27 = 98003060014i09.B1D
image_file28 = 98003090014i09.B1D
image_file29 = 98003120014i09.B1D
image_file30 = 98003150014i09.B1D
image_file31 = 98003180014i09.B1D
image_file32 = 98003210014i09.B1D
image_file33 = 98004000014i09.B1D
image_file34 = 98004030014i09.B1D
image_file35 = 98004060014i09.B1D
image_file36 = 98004090014i09.B1D
image_file37 = 98004120014i09.B1D
image_file38 = 98004150014i09.B1D
image_file39 = 98004180014i09.B1D
image_file40 = 98004210014i09.B1D
image_file41 = 98005000014i09.B1D
image_file42 = 98005030014i09.B1D
image_file43 = 98005060014i09.B1D
image_file44 = 98005090014i09.B1D
image_file45 = 98005120014i09.B1D
image_file46 = 98005150014i09.B1D
image_file47 = 98005180014i09.B1D
image_file48 = 98005210014i09.B1D
image_file49 = 98006000014i09.B1D
image_file50 = 98006030014i09.B1D
image_file51 = 98006060014i09.B1D
image_file52 = 98006090014i09.B1D
image_file53 = 98006120014i09.B1D
image_file54 = 98006150014i09.B1D

image_file55 = 98006180014i09.B1D
image_file56 = 98006210014i09.B1D

C.3 Sample ASCII (PCFin) File Listing for CER11.1P3

/CERES/ggeo/rcf/CER11.1P3_PCFin_METEO-6_ValidationR2_000000.19980101

```
############################
# CERES baseline Metadata #
############################

PGEName = CER11.1P3
SamplingStrategy = METEO-6
ProductionStrategy = ValidationR2
CERDataDateYear = 1998
CERDataDateMonth = 01
CERDataDateDay = 01
CERHrOfMonth =

ConfigurationCode = 000000
SWsccr = 048
DATAsccr = 000

##################################
# PGE specific runtime parameters
##################################

input_data_id = B1_MET
satellite_name = METEO-6
diagnostics_flag  = 0

##################################
# PCF Directories
##################################

Input_File_Directory = /CERES/ggeo/data/input
Output_File_Directory = /CERES/ggeo/data/out_comp/data
Support_Input_Directory = /CERES/ggeo/data/ancillary
Support_Output_Directory = /CERES/ggeo/data/runlogs
Intermediate_Input_Directory = /CERES/ggeo/data/int_prod
Intermediate_Output_Directory = /CERES/ggeo/data/int_prod
Tempory_File_Directory = /CERES/ggeo/data/scr
```

```
###################################
# ggeo specific directories
###################################

MCF_Template_Directory = /CERES/ggeo/rcf
QC_File_Directory = /CERES/ggeo/data/out_comp/qa_reports

###################################
# input file names
###################################

image_file1 = B1MET6.250.199712
image_file2 = B1MET6.251.199712
image_file3 = B1MET6.252.199712
image_file4 = B1MET6.253.199712
image_file5 = B1MET6.254.199712
image_file6 = B1MET6.255.199712
image_file7 = B1MET6.256.199712
image_file8 = B1MET6.001.199801
image_file9 = B1MET6.002.199801
image_file10 = B1MET6.003.199801
image_file11 = B1MET6.004.199801
image_file12 = B1MET6.005.199801
image_file13 = B1MET6.006.199801
image_file14 = B1MET6.007.199801
image_file15 = B1MET6.008.199801
image_file16 = B1MET6.009.199801
image_file17 = B1MET6.010.199801
image_file18 = B1MET6.011.199801
image_file19 = B1MET6.012.199801
image_file20 = B1MET6.013.199801
image_file21 = B1MET6.014.199801
image_file22 = B1MET6.015.199801
image_file23 = B1MET6.016.199801
image_file24 = B1MET6.017.199801
image_file25 = B1MET6.018.199801
image_file26 = B1MET6.019.199801
image_file27 = B1MET6.020.199801
image_file28 = B1MET6.021.199801
image_file29 = B1MET6.022.199801
image_file30 = B1MET6.023.199801
image_file31 = B1MET6.024.199801
image_file32 = B1MET6.025.199801
image_file33 = B1MET6.026.199801
image_file34 = B1MET6.027.199801
image_file35 = B1MET6.028.199801
```

image_file36 = B1MET6.029.199801
image_file37 = B1MET6.030.199801
image_file38 = B1MET6.031.199801
image_file39 = B1MET6.032.199801
image_file40 = B1MET6.033.199801
image_file41 = B1MET6.034.199801
image_file42 = B1MET6.035.199801
image_file43 = B1MET6.036.199801
image_file44 = B1MET6.037.199801
image_file45 = B1MET6.038.199801
image_file46 = B1MET6.039.199801
image_file47 = B1MET6.040.199801
image_file48 = B1MET6.041.199801
image_file49 = B1MET6.042.199801
image_file50 = B1MET6.043.199801
image_file51 = B1MET6.044.199801
image_file52 = B1MET6.045.199801
image_file53 = B1MET6.046.199801
image_file54 = B1MET6.047.199801
image_file55 = B1MET6.048.199801
image_file56 = B1MET6.049.199801

C.4 Sample ASCII (PCFin) File Listing for CER11.1P4

/CERES/ggeo/rcf/CER11.1P4_PCFin_GMS-5_ValidationR2_000000.19980101

```
############################
# CERES baseline Metadata #
############################

PGEName = CER11.1P4
SamplingStrategy = GMS-5
ProductionStrategy = ValidationR2
CERDataDateYear = 1998
CERDataDateMonth = 01
CERDataDateDay = 01
CERHrOfMonth =

ConfigurationCode = 000000
SWsccr = 048
DATAsccr = 000
```

```
###################################
# PGE specific runtime parameters
###################################

input_data_id = B1_GMS
satellite_name = GMS-5
diagnostics_flag  = 0

###################################
# PCF Directories
###################################

Input_File_Directory = /CERES/ggeo/data/input
Output_File_Directory = /CERES/ggeo/data/out_comp/data
Support_Input_Directory = /CERES/ggeo/data/ancillary
Support_Output_Directory = /CERES/ggeo/data/runlogs
Intermediate_Input_Directory = /CERES/ggeo/data/int_prod
Intermediate_Output_Directory = /CERES/ggeo/data/int_prod
Tempory_File_Directory = /CERES/ggeo/data/scr

###################################
# ggeo specific directories
###################################

MCF_Template_Directory = /CERES/ggeo/rcf
QC_File_Directory = /CERES/ggeo/data/out_comp/qa_reports

###################################
# input file names
###################################

image_file1 = B1GMS5.240.199712
image_file2 = B1GMS5.241.199712
image_file3 = B1GMS5.242.199712
image_file4 = B1GMS5.243.199712
image_file5 = B1GMS5.244.199712
image_file6 = B1GMS5.245.199712
image_file7 = B1GMS5.246.199712
image_file8 = B1GMS5.247.199712
image_file9 = B1GMS5.248.199712
image_file10 = B1GMS5.249.199712
image_file11 = B1GMS5.250.199712
image_file12 = B1GMS5.251.199712
image_file13 = B1GMS5.252.199712
image_file14 = B1GMS5.001.199801
image_file15 = B1GMS5.002.199801
```

image_file16 = B1GMS5.003.199801
image_file17 = B1GMS5.004.199801
image_file18 = B1GMS5.005.199801
image_file19 = B1GMS5.006.199801
image_file20 = B1GMS5.007.199801
image_file21 = B1GMS5.008.199801
image_file22 = B1GMS5.009.199801
image_file23 = B1GMS5.010.199801
image_file24 = B1GMS5.011.199801
image_file25 = B1GMS5.012.199801
image_file26 = B1GMS5.013.199801
image_file27 = B1GMS5.014.199801
image_file28 = B1GMS5.015.199801
image_file29 = B1GMS5.016.199801
image_file30 = B1GMS5.017.199801
image_file31 = B1GMS5.018.199801
image_file32 = B1GMS5.019.199801
image_file33 = B1GMS5.020.199801
image_file34 = B1GMS5.021.199801
image_file35 = B1GMS5.022.199801
image_file36 = B1GMS5.023.199801
image_file37 = B1GMS5.024.199801
image_file38 = B1GMS5.025.199801
image_file39 = B1GMS5.026.199801
image_file40 = B1GMS5.027.199801
image_file41 = B1GMS5.028.199801
image_file42 = B1GMS5.029.199801
image_file43 = B1GMS5.030.199801
image_file44 = B1GMS5.031.199801
image_file45 = B1GMS5.032.199801
image_file46 = B1GMS5.033.199801
image_file47 = B1GMS5.034.199801
image_file48 = B1GMS5.035.199801
image_file49 = B1GMS5.036.199801
image_file50 = B1GMS5.037.199801
image_file51 = B1GMS5.038.199801
image_file52 = B1GMS5.039.199801
image_file53 = B1GMS5.040.199801
image_file54 = B1GMS5.041.199801
image_file55 = B1GMS5.042.199801
image_file56 = B1GMS5.043.199801
image_file57 = B1GMS5.044.199801
image_file58 = B1GMS5.045.199801
image_file59 = B1GMS5.046.199801
image_file60 = B1GMS5.047.199801

image_file61 = B1GMS5.048.199801
image_file62 = B1GMS5.049.199801

C.5 Sample ASCII (PCFin) File Listing for CER11.2P1

/CERES/ggeo/rcf/CER11.2P1_PCFin_CERES_Composite_000000.199801

```
############################
# CERES baseline Metadata #
############################

PGEName = CER11.2P1
SamplingStrategy = CERES
ProductionStrategy = Composite
CERDataDateYear = 1998
CERDataDateMonth = 01
CERDataDateDay =
CERHrOfMonth =

ConfigurationCode = 000000
SWsccr = 048
DATAsccr = 000

##################################
# PGE specific runtime parameters
##################################

restart = 0
plot = y
first_plot_hour = -11
last_plot_hour  = 754

##################################
# PCF Directories
##################################

Input_File_Directory = /CERES/ggeo/data/int_prod
Output_File_Directory = /CERES/ggeo/data/out_comp/data
Support_Input_Directory = /CERES/ggeo/data/ancillary
Support_Output_Directory = /CERES/ggeo/data/runlogs
Intermediate_Input_Directory = /CERES/ggeo/data/int_prod
Intermediate_Output_Directory = /CERES/ggeo/data/int_prod
Tempory_File_Directory = /CERES/ggeo/data/scr
```

```
###################################
# ggeo specific directories
###################################

MCF_Template_Directory = /CERES/ggeo/rcf
QC_File_Directory = /CERES/ggeo/data/out_comp/qa_reports

###################################
# input file names
###################################

input_file1 = CER_GRAN_GMS-5_ValidationR2_000000.19980101
input_file2 = CER_GRAN_GMS-5_ValidationR2_000000.19980107
input_file3 = CER_GRAN_GMS-5_ValidationR2_000000.19980113
input_file4 = CER_GRAN_GMS-5_ValidationR2_000000.19980119
input_file5 = CER_GRAN_GMS-5_ValidationR2_000000.19980125
input_file6 = CER_GRAN_GOES-8_ValidationR2_000000.19980101
input_file7 = CER_GRAN_GOES-8_ValidationR2_000000.19980107
input_file8 = CER_GRAN_GOES-8_ValidationR2_000000.19980113
input_file9 = CER_GRAN_GOES-8_ValidationR2_000000.19980119
input_file10 = CER_GRAN_GOES-8_ValidationR2_000000.19980125
input_file11 = CER_GRAN_GOES-9_ValidationR2_000000.19980101
input_file12 = CER_GRAN_GOES-9_ValidationR2_000000.19980107
input_file13 = CER_GRAN_GOES-9_ValidationR2_000000.19980113
input_file14 = CER_GRAN_GOES-9_ValidationR2_000000.19980119
input_file15 = CER_GRAN_GOES-9_ValidationR2_000000.19980125
input_file16 = CER_GRAN_METEO-6_ValidationR2_000000.19980101
input_file17 = CER_GRAN_METEO-6_ValidationR2_000000.19980107
input_file18 = CER_GRAN_METEO-6_ValidationR2_000000.19980113
input_file19 = CER_GRAN_METEO-6_ValidationR2_000000.19980119
input_file20 = CER_GRAN_METEO-6_ValidationR2_000000.19980125
```